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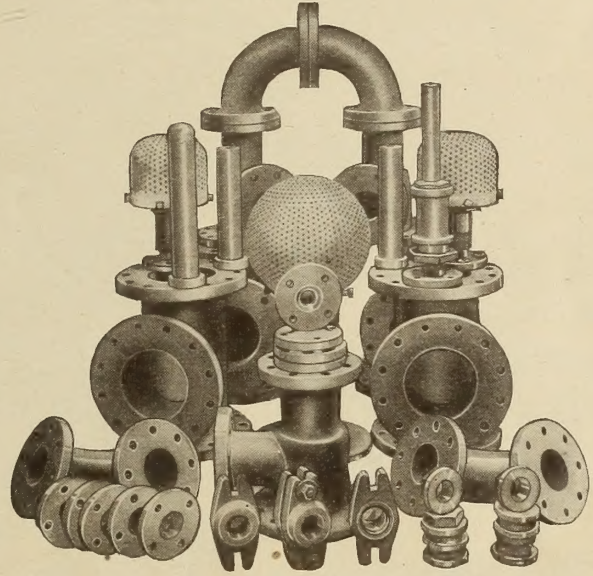
HYMAC

ACID-RESISTING
BRONZE
DIGESTER FITTINGS
THE—HYMAC—KIND

QUALITY



SERVICE

Made to your analysis from your drawings or patterns if desired, or from our standard specification.

WE PROFIT ONLY AS WE SERVE
WHY NOT TRY OUR SERVICE

WE USE NEW METAL ONLY

The Hydraulic Machinery Co.,
Limited
MONTREAL - - CANADA

HYMAC

Whether you have a steep-roof or flat-roof problem, our engineers are at your service.

Proven Protective Industrial Paints--

We have studied industrial painting problems for years. Our laboratories have been constantly at work producing paints that meet the most exacting requirements. Paints that withstand severe service, that are proof against weather, water, steam, acids and alkalies; inexpensive and easy to use.

Everjet Special Penstock Paint, for both wood and metal penstocks, is one of the Barrett Industrial Paints, that is recognized as standard by Pulp and Paper Plants throughout the Dominion. The Everjet line also includes special paints for boilers, machinery, smokestacks, etc.

If your paint needs are unusual, we will be glad to make up special samples, free of charge.

Where a general utility protective paint for exposed wood and metal surfaces is desired, Everjet Elastic Carbon Paint is unequalled.

Plastic Elastigum Patching Cement

Plastic Elastigum Patching Cement is tough, durable, acid-proof and water-proof. It sticks tenaciously to either wet or dry surfaces; can be used in all kinds of weather; is easy to apply, low in price and comes all ready for use.

Is unequalled for stopping leaks in roofs, repairing flashings, relining gutters, stuffing cornices and for innumerable other purposes.

In 1-lb. tins and larger packages up to barrels of about 600 lbs.

Everlastic Liquid Roofing Cement

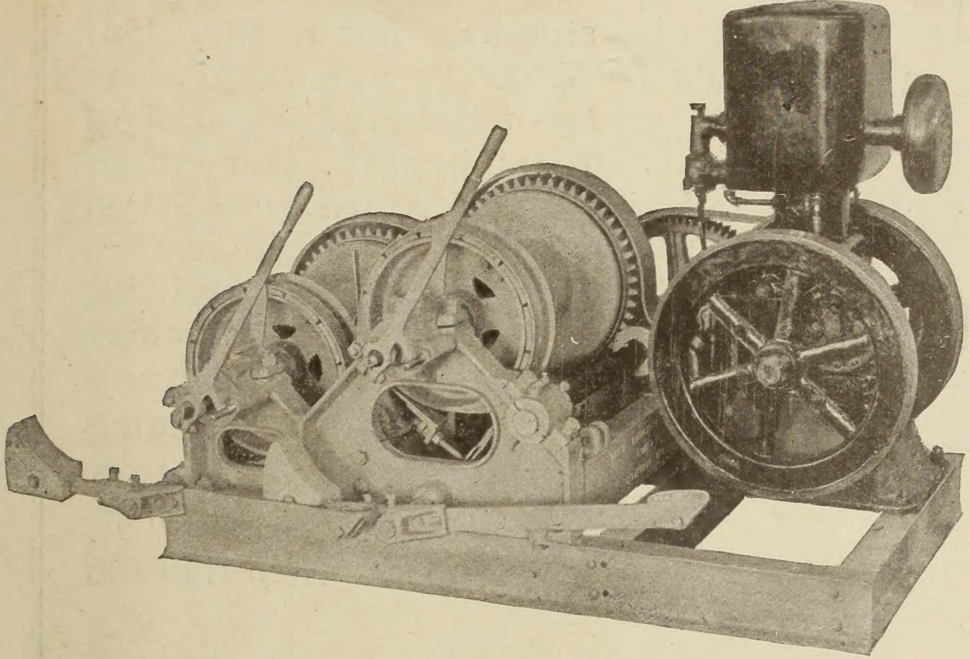
Unequalled for resurfacing worn-out prepared and "rubber" roofs. Has the consistency of thick molasses; is easy to apply and dries quickly into a hard, elastic, wonderfully durable coat. Proof against moisture, acids, alkalies and fumes.

Winnipeg
Vancouver
Halifax, N. S.

The Barrett Company

Montreal
Toronto
St, John, N.B.

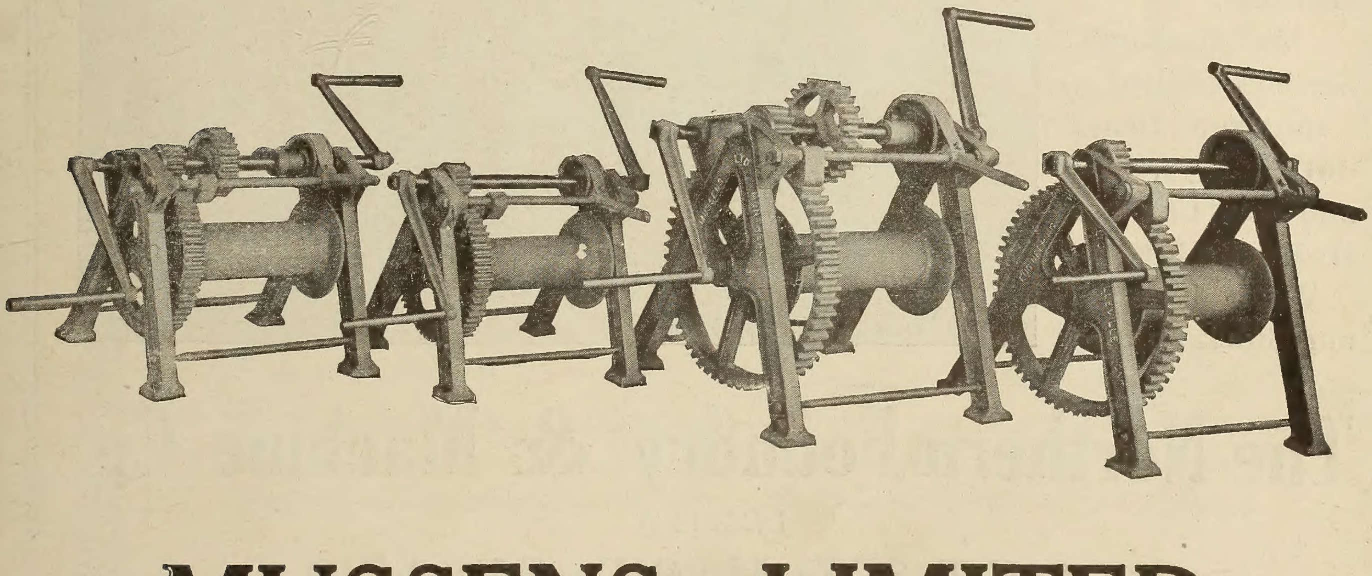
MARSH HOISTS



Gasoline
Steam
Electric
or
Belt Drive

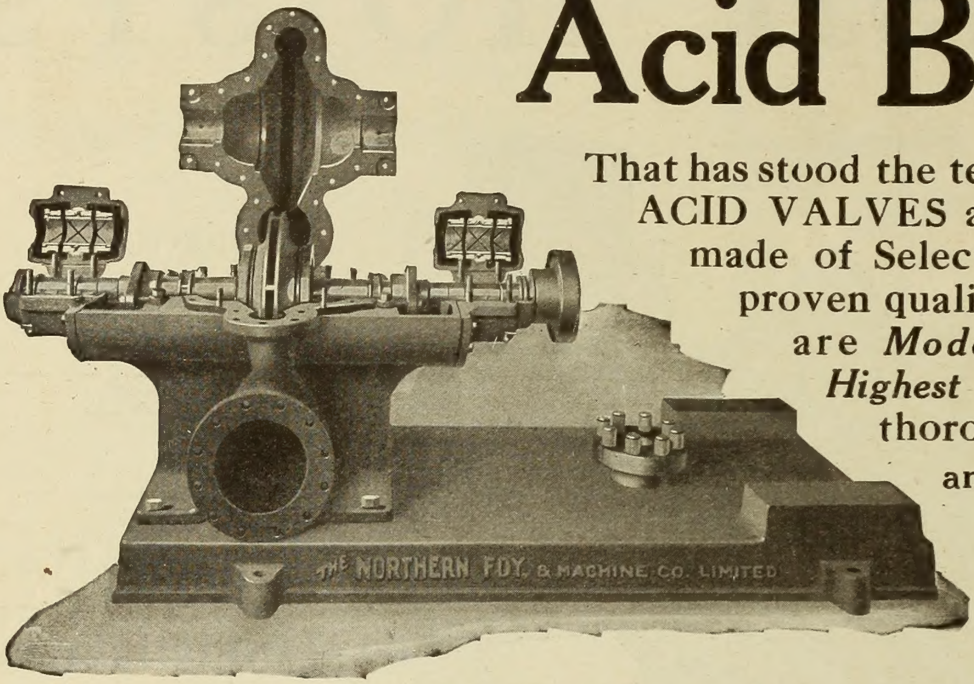
MADE IN CANADA

FLOOR WINCHES Single and Double Purchase



MUSSENS LIMITED

MONTREAL WINNIPEG
TORONTO VANCOUVER



Acid Bronze

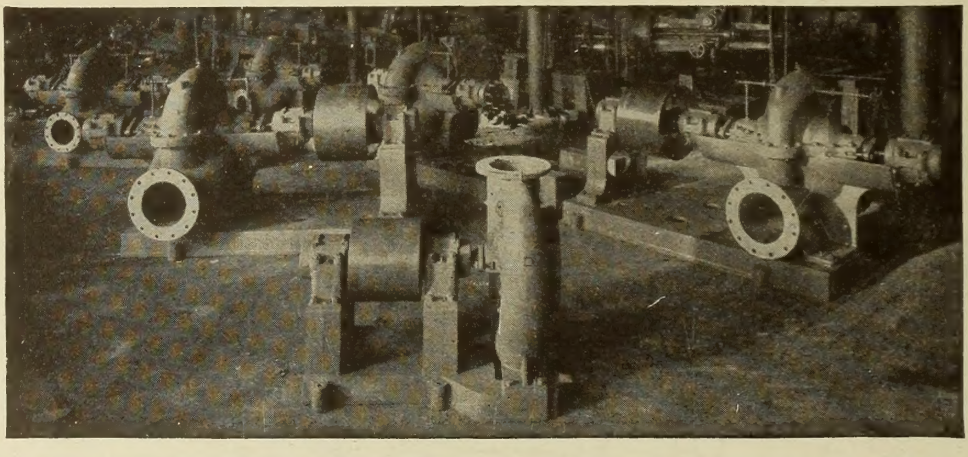
That has stood the test of time. Our ACID VALVES and PUMPS are made of Selected material of proven quality. Our Pumps are *Modern* in design *Highest in* Efficiency—thoroughly reliable and we have proven beyond question by numerous tests at the works and actual operation under hard Continuous Service in the field that our pumps are all that we claim for them.

We protect our customers by testing all pumps before shipping.

Get a list of installations and satisfied customers. They are numerous

We can also quote you on

Grinders, Wet Machines, Screens, Chilled sprockets, Heavy duty Pulleys, Iron and brass Castings Hydraulic Presses. Water pumps and Stock Pumps.



The Northern Foundry & Machine Co.

LIMITED

SAULT STE. MARIE, ONTARIO

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CALGARY AGENT—W. J. Yeo. 408 McLean Bldg.

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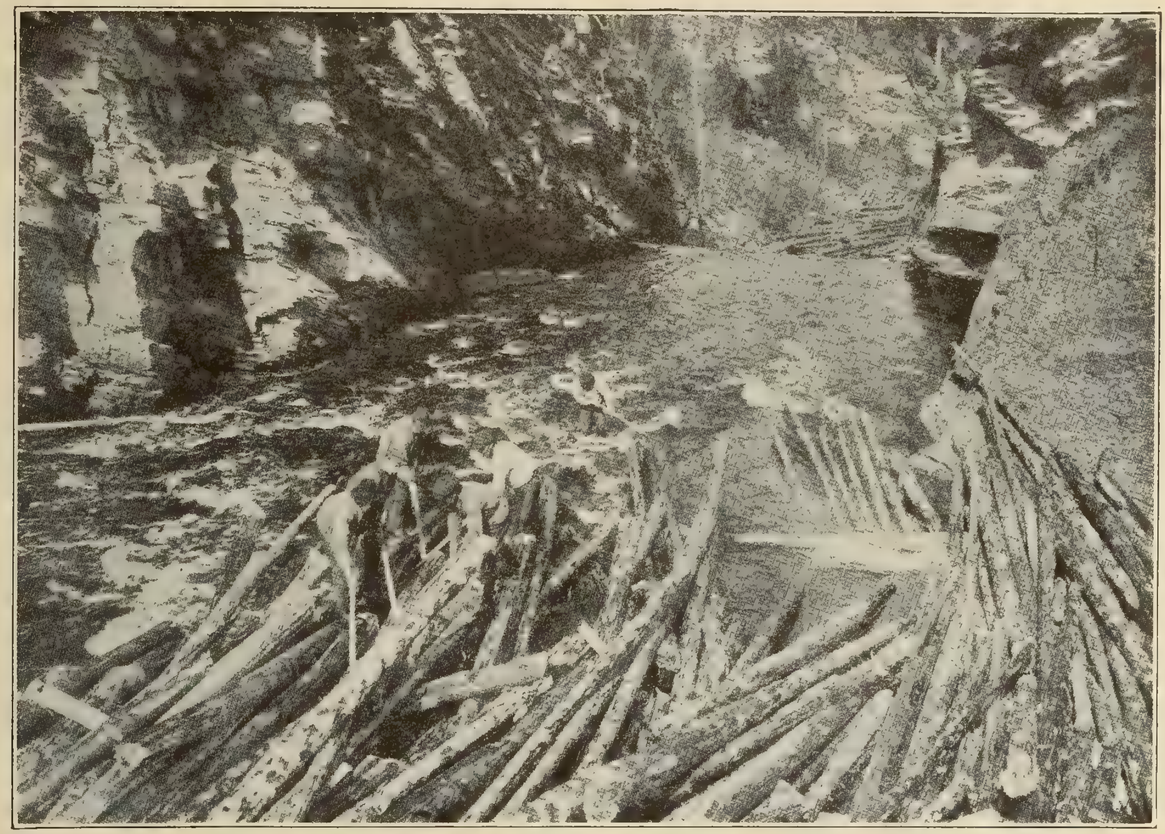


The Best Way to Bark Wood is by Drum and There is a Best Drum

OUR drum design accomplishes wet barking, a most important—and exclusive—feature.

The slotted construction permits the free escape of bark as removed.

Barking capacity of our drum is not approached by any other type of drum of similar size.

The flexibility of chain suspension—hot rolled U-bars of such shape as gives tremendous strength and permits a solid job of riveting to channel rings—a surface of perfect tumbling efficiency which still cannot bruise the wood—these are more than talking points.

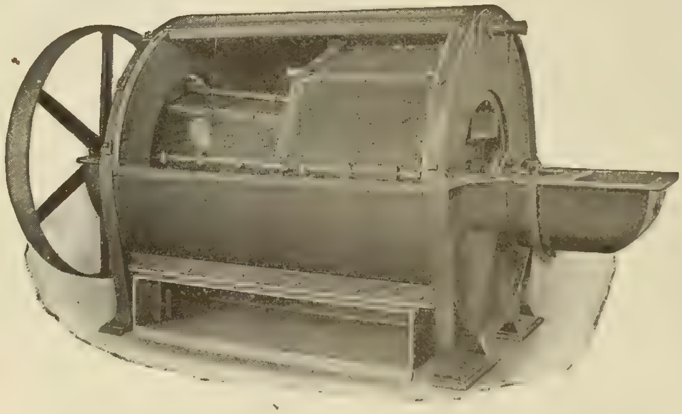
Speaking ot durability, our drums have in numerous instances been operated continuously for six years—not months—without an hour's loss of time by breakdown. The specifications of our drums are interesting, but their field records are conclusive.

CANADIAN BARKING DRUM CO., LTD.,
Royal Bank Building
TORONTO, CANADA

Insure your Output

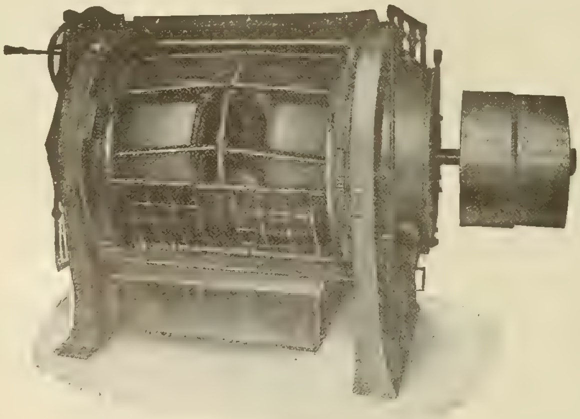
By Installing Modern Machinery

Knotters, Knot Screens or Sliver Screens



For sulphite, sulphate, soda, kraft or ground wood. Capacity up to 50 tons, less than 1 H.P. per machine, single belt drive, no gears or sprockets, no packings, slow speed, quick detachable plates. The standard machine for removing knots, shives and foreign matter.

Centrifugal Screens



For screening sulphite, sulphate, soda, kraft or ground wood. Highest quality of stock produced at minimum power, revolving screen plates, mechanically correct.

Our other Machines have proved their own value

Your Investigation Warranted

SHERBROOKE MACHINERY CO. Limited,

SHERBROOKE - QUEBEC

Saving a Million Dollars a Year

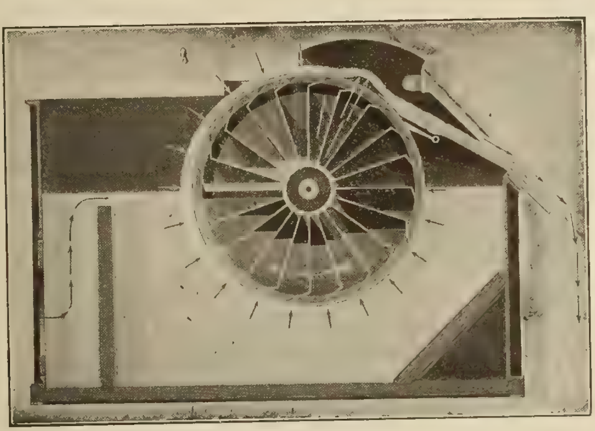


Diagram illustrating Cross Section of Pneumatic Save-All, showing direction of Air Pressures and Formation of Film of Fibres

Money SAVED pays dividends. Our Save-All is earning a million dollars a year for its users by saving waste fibre. We are on the trail of the other millions which are still flowing away each year in waste water.

CORRESPONDENCE A PLEASURE

Some Known Facts and a Few New Ones

(1) Everyone interested in the paper business knows that there is more or less waste from beginning to end of the entire process.

(2) He knows that in every industry in the world financial success rests, in a very great degree, upon preventing waste, in finding and stopping up, one by one, every possible source of loss.

(3) He knows that great progress has been made, in his own business, by instituting wise economies—real economies—in management, in production, in the marketing of his product.

(4) And yet he knows that until recently very little progress has been made in preventing the enormous but hidden losses through waste water that is rich in fibre.

(5) He knows all about the schemes that have been exploited and the costs incurred in trying to save this waste, and that as a rule this waste still goes on because the measures tried have not proved capable of preventing it

(6) Nevertheless, a way exists to save waste fibre successfully. The engraving gives an idea of this way, and we request only the opportunity to tell every mill owner and superintendent all about it.

(7) The reason of our success in this line is that we have found the one natural method of catching and holding the fibre as it flows away in the white water, and have applied this method in our Pneumatic Save-All.

(8) In the engraving our Pneumatic Save-All is shown in cross section. Inside the cylinder mould we produce a very slight vacuum, by a blower. The waste water is lightly sucked through the screen and drains away while the fibres are trapped and held upon the outside. They cannot rub off; they cannot slip through, for they are pressed flat upon the screen by air pressure. (See the inwardly pointing arrow heads.) At the top of the circle each section of the cylinder in turn comes under the direct action of the pressure side of the blower, and the film of pulp is lifted off (see the outwardly pointing arrows) onto a deflector. One save-all and blower take only 5 H.P.; and the same blower, with very little extra power, will serve two save-alls.

We have installed hundreds of them in mills where old methods had proved useless, and where we have had to prove both the existence of heavy losses and the power of our Save-All to prevent them.

SHERBROOKE MACHINERY CO., Limited

SHERBROOKE - Quebec

GUTTA PERCHA & RUBBER, LIMITED
TRADE P.M.S MARK
TORONTO, CANADA

"P.M.S." Belting

Built-up Plies of Cotton Duck Woven to our own specifications and firmly united by our Rubber Friction

We have given special study to this branch of our business with the result that we supply "P. M. S." Belting in full confidence that it will meet successfully even the severest tests.

For Effective Service in the Transmission Field

Our research has evolved methods that secure maximum adhesion, strength of fibre and age-resisting ability. Careful vulcanization to assure correct, uniform pressure, elimination of surplus elasticity and exactly the right temperature to properly cure the belt without burning the stock is an essential scrupulously maintained.

Our belting experts will be glad to recommend a solution of your problems in belting for all transmissions, conveying of hot or cold materials, bucket elevators, or practically any kind of belt service.

An inquiry involves no obligation.

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Gutta Percha & Rubber,
Limited

Head Offices and Factories, - TORONTO
Branches in all Leading Cities of Canada

ESTABLISHED 1870

AYERS LIMITED

LACHUTE MILLS P.Q.

Pioneers and leading the field, in Canada, in the manufacture of

PULP and PAPER MAKERS' FELTS

Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

The success and reputation of "Ayers Felts" bears evidence of the Quality and Dependability built into them. Construction features evolved for all kinds of machines, for all classes of paper, to give maximum efficiency with regard to the particular manufacturing problems in the various mills.

The Attainment of an Ideal

"FELTS
WASHED
WITHOUT
SHUTTING DOWN
PAPER MACHINES"

The Patented "Ayers" FELT WASHER attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

PATENTED IN U.S.A., CANADA AND EUROPEAN COUNTRIES.
PATENTS APPLIED FOR IN JAPAN AND MEXICO.

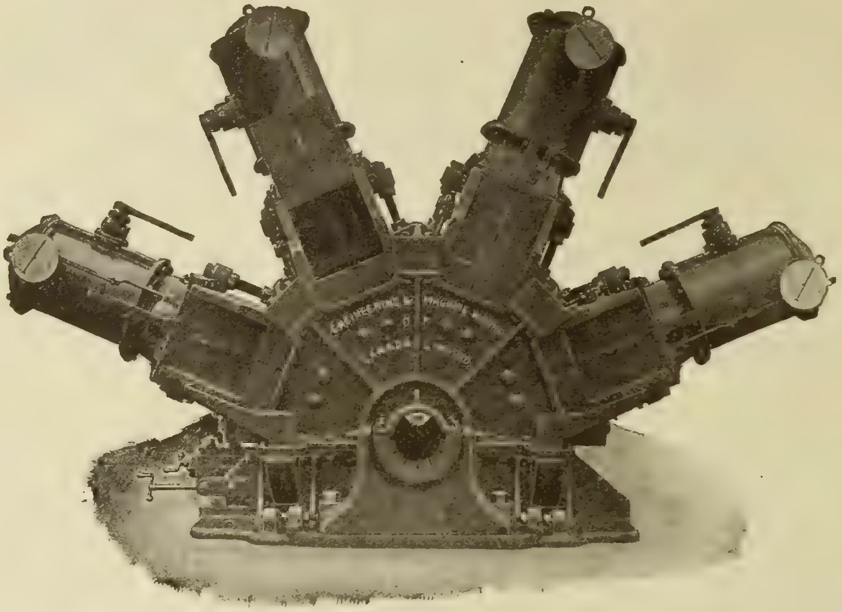
Already in operation in some of the largest Paper Mills where it is recognized as indispensable and a great money saver.

Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application.

A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

These two essential factors — "AYERS FELTS and FELT WASHER" — in perfect team work — make for efficiency, economy and genuine satisfaction in the Paper Mill.



Built also in 3 pocket style

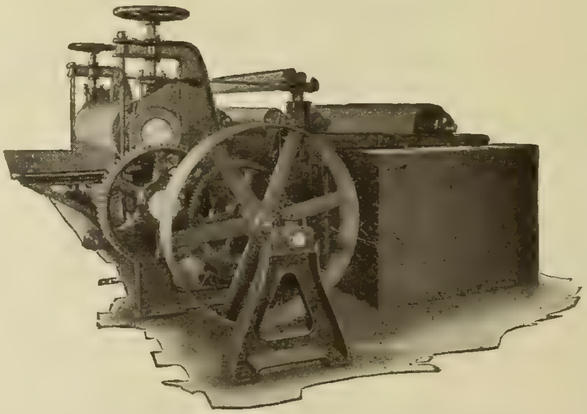
Here is Your Next Grinder

If you will listen to a plain, unvarnished statement of this machine's construction, capacity, and exclusive "Tidmarsh" features the statement in the headline above will "make good." It will give you a 30 per cent. increase in capacity with the same power. The patent pulp scrapers prevent "flour pulp." The automatic door openers open the door instantly when the wood is ground away. Pockets are tapered, to prevent wood from wedging. Large discharge openings. Large hand hole plates. Packing adjustable while machine is working. And there are several other improvements we would like to tell you about. Also—we can rebuild your old 3-pocket machines to modern 4-pocket type.

Our new Improved Wet Machine

Here it is—A rugged, well designed machine, supplied with interchangeable rolls, complete with suction box, shower pipe, cut-off knife and either steel, pine or cypress vats. Any type of drive to suit requirements. Built with all Tidmarsh improvements, in any desired size, with single or double cylinders. Let us send you complete description and prices.

Write us for new, low prices on Pulp Grinders (3 and 4 pocket), Chippers, Screens, Digestors, Tanks Diffusers, Penstock Work, Plate Work of all kinds. Boilers of all types. Brass castings, Electric welding.



Our new improved Wet Machine

Engineering & Machine Works of Canada, Limited

St Catharines, Ontario.

EASTERN SALES OFFICES:
Hall Machinery Co., Sherbrooke and Birks Building, Montreal

Announcing

The IMPROVED Kenwood Tan Jacket

Several years' experiments, resulting in new methods of construction, which necessitated especially designed machinery, have developed this jacket.

The result is all the advantages of the old jacket with softer, more resilient surface; a jacket that will shrink back more tightly and hug the roll more firmly; that is not likely to creep or lump; a jacket that permits change of deckle out or in; that removes more water.

Remember that the word "TAN" means that this jacket has been treated with a special process based on the processes used in tanning leather, which makes the jacket stronger, more resistant to friction and abrasion, and to the action of water and chemicals. Kenwood Tan Jackets being woven in layers or strata may be worn away to the last layer without endangering wires.

The perfection of the Kenwood Tan Jacket and the improvements in operation resulting from its use, make unnecessary the expensive installation of SUCTION COUCH ROLLS.

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Wet End of 232 in. Fourdrinier Machine at Abitibi Power & Paper Co., Iroquois Falls, Ont.

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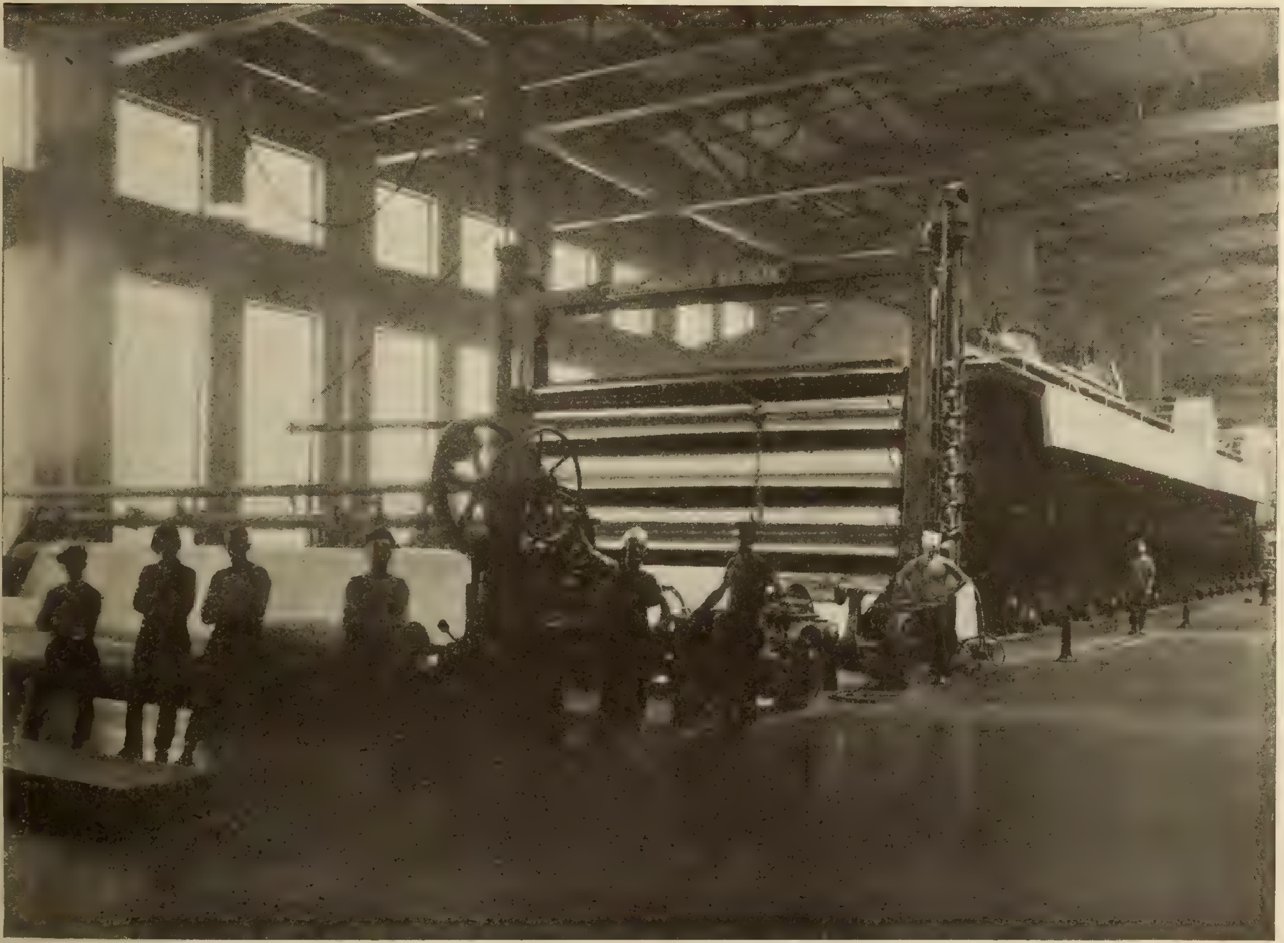

Calenders, Reels, and Winder, on the Widest Machine in the World. There are two of these monsters at Iroquois Falls, Ont.

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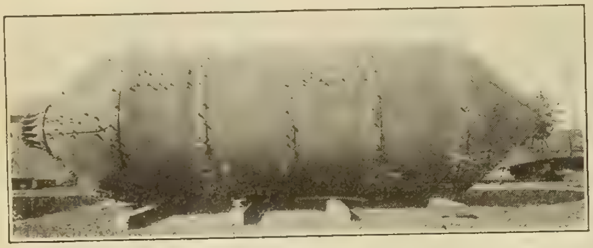
Horton Digester Assembled in Plant



HORTON TANKS

AND STEEL PLATE CONSTRUCTION

Serve Many Purposes in Paper and Pulp Mills

Horton elevated tanks, digesters, pulp tanks, acid tanks, chip tanks and smoke stacks are well known in many mills.

157 *We will gladly send you full information without placing you under any obligation*

HORTON STEEL WORKS, LIMITED

BRIDGEBURG, ONT.
132 Janet Street

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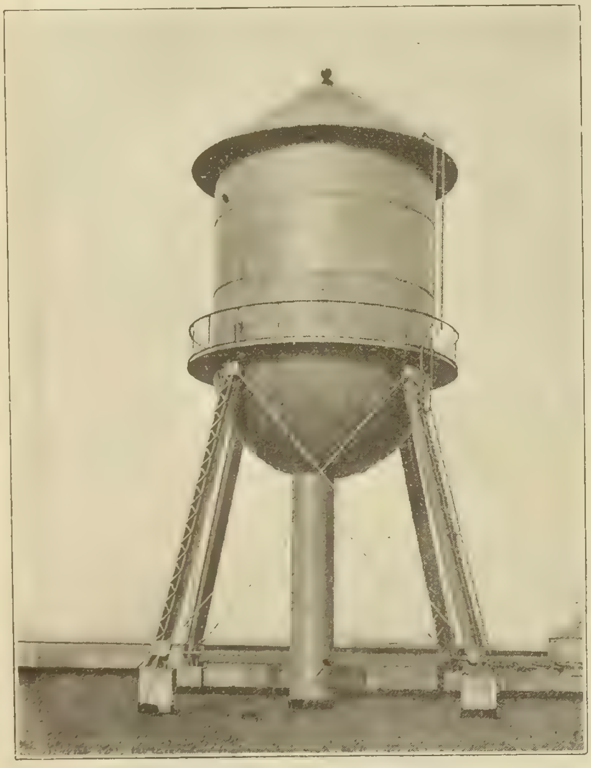


Horton Elevated Sprinkler Tank.

PERKINS FANS

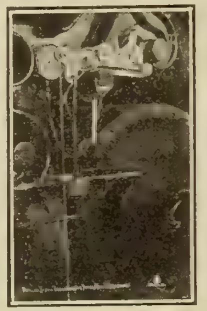
Our Efficiency Guarantee

We guarantee that Perkins Fans will displace more air under like working conditions and power consumption than any other fan of their type made, **or we will refund the price of the fan.**

WRITE NOW for full information as to any size or style of Fan that best fits the needs of **your** plant. Address Dept. C7, B. F. PERKINS & SON, Inc., Holyoke, Mass.

B. F. PERKINS & SON Inc.
HOLYOKE - MASS

The Pickle Automatic Steam Regulator



Saves steam

It also retains the proper amount of moisture in the paper thus eliminating the breaks at the calenders.

This regulator gives you higher and more uniform finished paper with less calendering.

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BUCKLAND CONN.

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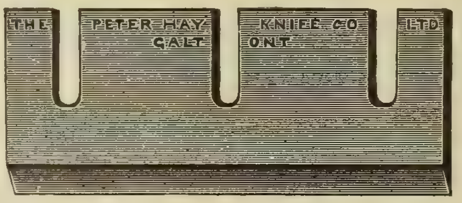
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Made from the best English Steel and Warranted

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THE difference between inexperience and experience is the difference between intention and fulfillment.

THE fact that a seller's intentions are good, is poor compensation if his organization is bad. Sentiment is a poor substitute for efficiency.

OUR 36 years' experience makes "intention" spell fulfillment.

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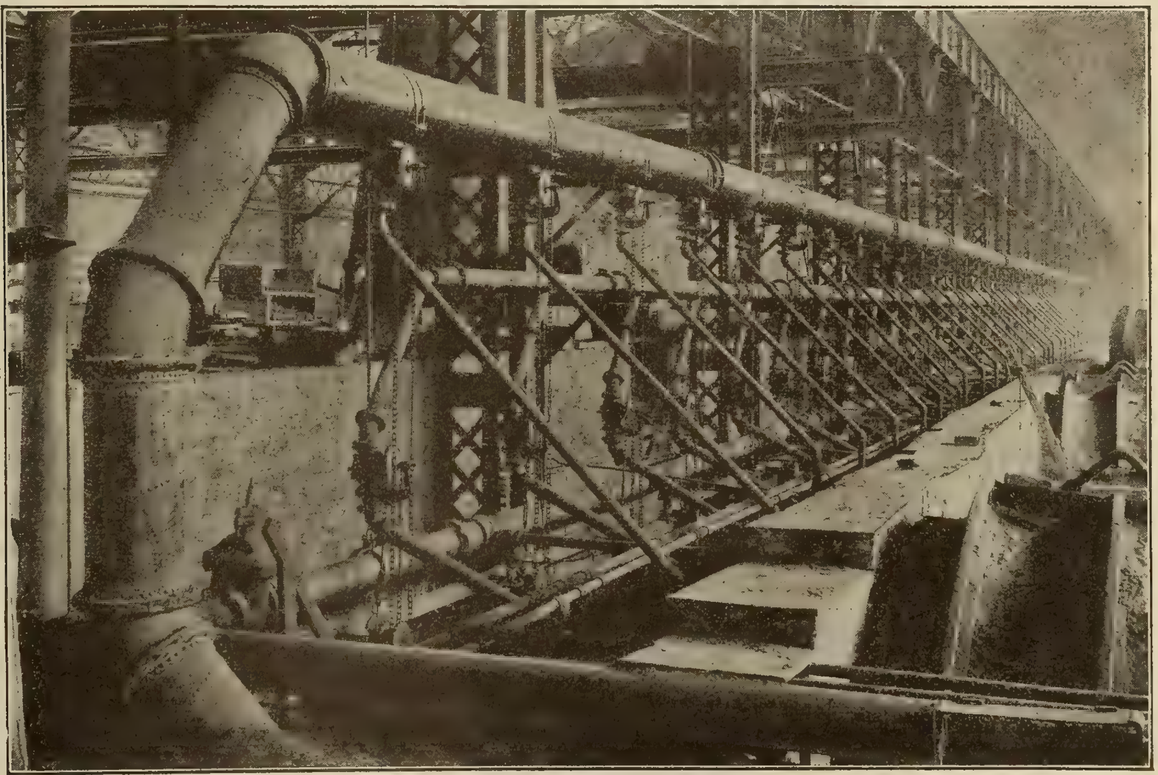

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No matter what the industry — woollen mills, silk mills, shoe factories, steel plants, iron foundries, railroads, — they all need water, both for running use and as fire protection, and to a degree too heavy to be met by the average community water systems. Because Des Moines elevated tanks offer the maximum in service and safety at the minimum cost, they are becoming increasingly popular year by year.

Consult our engineers without obligation about your problems. Des Moines design, fabricate and erect any form of steel plate work, bridges, factory and office buildings, schools, churches,, etc. — the same excellent service for all.

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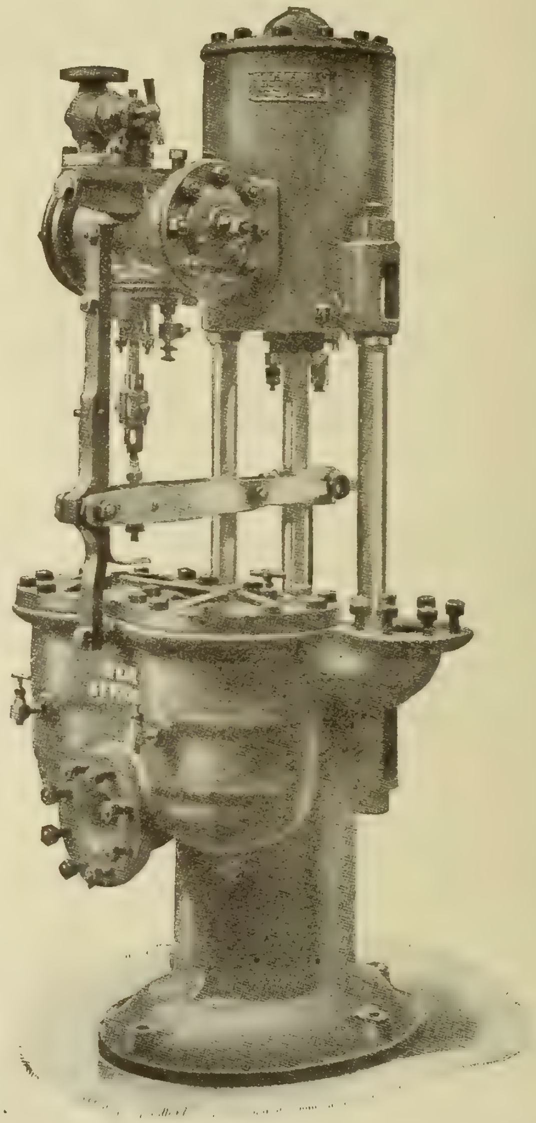

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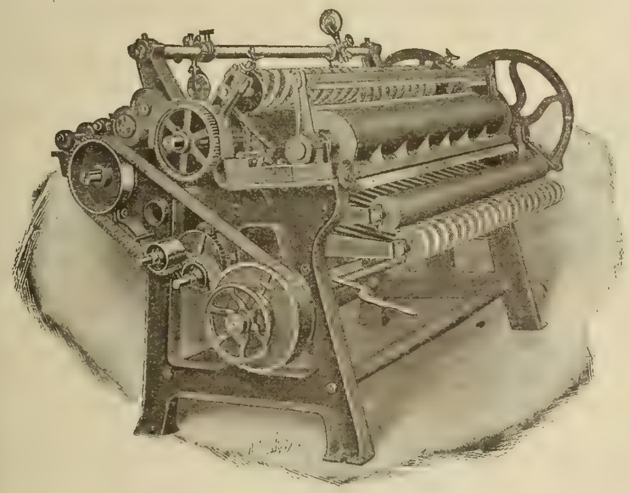

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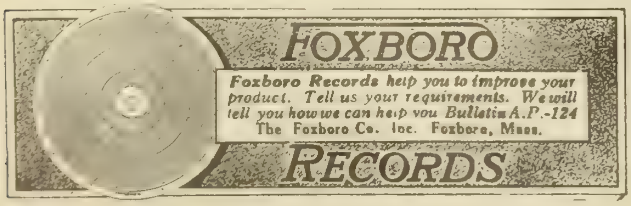

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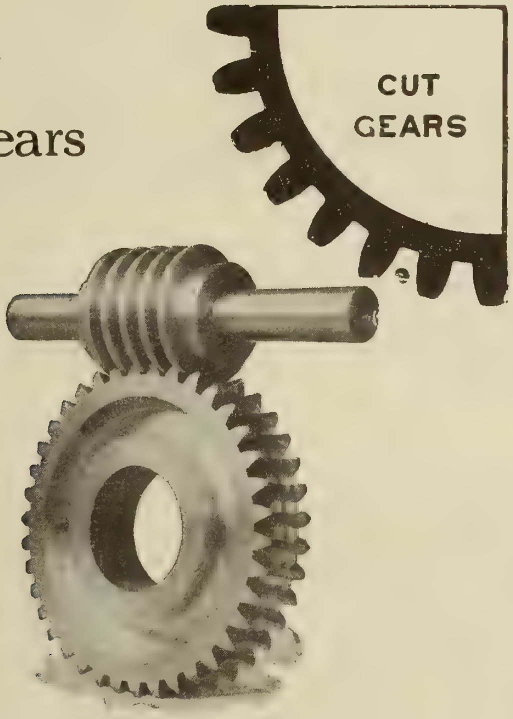

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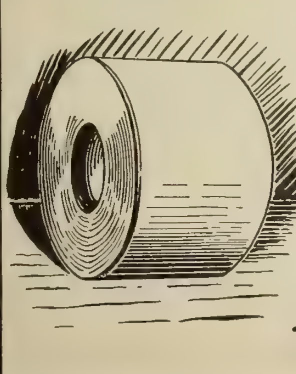

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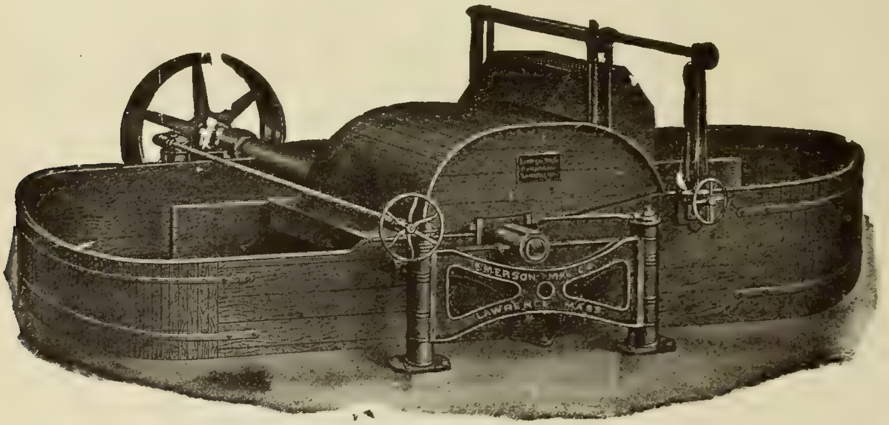
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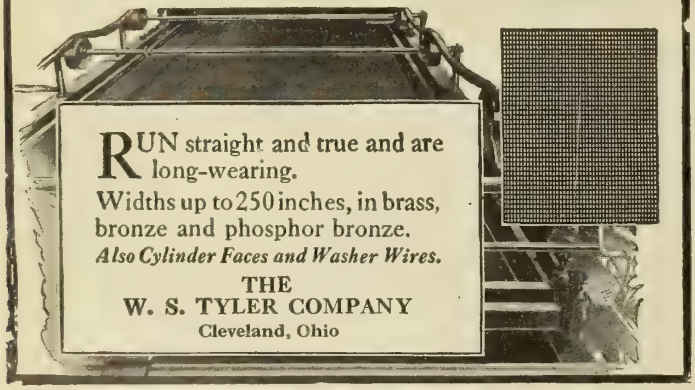

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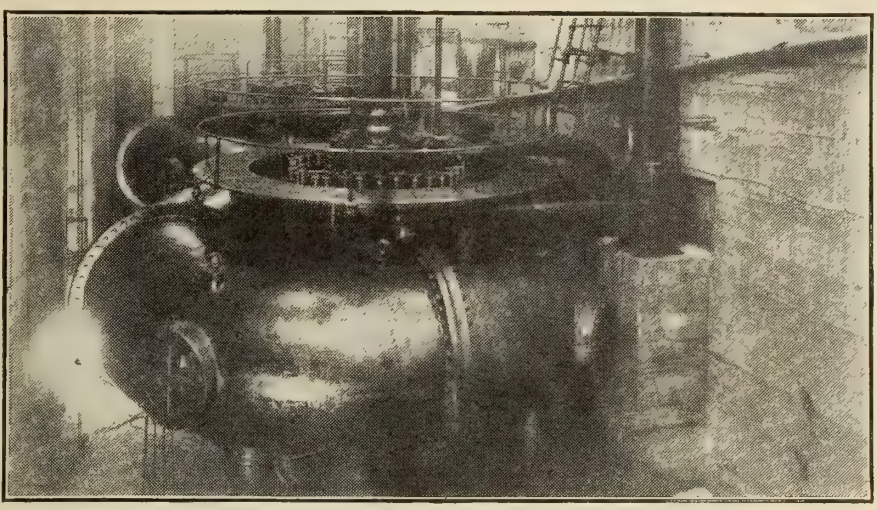

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VOL. XX. **Gardenvale, P. Q., July 6th, 1922** **No. 26**

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:-: EDITORIAL :-:

AN ASTOUNDING STATEMENT

Mr. C. V. Corless made an astounding statement in his presidential address to the Canadian Institute of Mining and Metallurgy when he said, "We find a total of rather less than 15 per cent of the area of Canada suitable for profitable agriculture. This leaves 85 per cent, of which the principal or only permanent or basic industry is or will be mining....Over a large part of this mining area, lumbering will for many years be an important industry, and over some of it re-forestation may make lumbering a permanent industry. But exclusive of this factor, which, so far, has made all too little progress, we shall find that as the lumberman succeeds the trapper, so speaking broadly, will the prospector and the miner succeed the woodsman."

Mr. Corless not only shows that less than 15 per cent of the total area of the Dominion of Canada is really to be classed as agricultural land, but that much of this is underlain with rich mineral deposits. His excellent paper points out geological reasons for assuming that the great plain surrounding Hudson Bay and the rocky ridges of the Laurentian and Rocky Mountain regions may be expected to yield treasures of enormous magnitude because the same formations have created fabulous wealth elsewhere. The picture drawn of "The Mining Industry: Its future place in the industrial development of Canada" is indeed bright and encouraging. No doubt the mining industry will come more and more into prominence as a basis for Canadian enterprise and prosperity.

But along with his happy outlook for the mining industry — and it is not exaggerated, Mr. Corless states a view of the lumbering industry which we consider both correct and unsound. Based on history, it may be correct to assume that the miner follows the lumberman and remains in final possession of our hinterland. Why not? The lumberman has slashed out the timber worth while, leaving the ground covered with debris, and the poorer species and imperfect trees to blow down and form a fire trap. Then the camper, fisherman, *and prospector* come along and drop matches and pipe ashes or leave campfires to start a conflagration that leaves nothing but bare, black poles and white sand or baked clay for the sun to shine on. Of course the forest is gone, and the lumbering industry with it. If there is mineral wealth beneath the barren landscape, why should we not expect to see the miner take possession, either permanently or for as long as the digging is good. That has evidently been the attitude of both lumberman and prospector in days not altogether gone by. The lumberjack has said: "I'll take the best; to hell with the rest." The mining man says: "My ore is below; what do I care for the trees?" And so slash is left in the woods, forest fires destroy millions of cords, and smelter fumes kill acres of vegetation.

Mr. Corless says lumbering *may* be an important industry for many years over parts of his mining area and by re-forestation even become permanent in spots. Perhaps that is an attitude common to the mining fraternity. It may even be ascribed to some other parts of the public. In any case it is an attitude inimical to the public good and such doctrine is iniquitous. Perhaps the idea is to develop a metallurgical product as light, flexible, workable, and adaptable as wood; perhaps our letters, records, and news are to be written or printed on sheets of metal. Civilization demands forests. The miner can have the minerals under 85 per cent or 100 per cent of Canada's soil, but neither he nor any other party shall say that the industries based on the forest are not *permanent, basic industries,* or that the forest is only suffered to remain in God's sunlight till such time as the miner chooses to possess the land.

CORRESPONDENCE COURSES STARTED

The ideal in the minds of the Education Committees of the Technical Section of the Canadian Pulp and Paper Association and of the Technical Association of the (U. S.) Pulp and Paper Industry is practically achieved—and new ideals formed—Three volumes of the 5 volume textbook on the Manufacture of Pulp and Paper, prepared under the Joint Committee at a cost of $40,000 are in print and the other two volumes in press.

Based on these books, which are hailed everywhere as the very last word on the subject and the best anywhere in excellence of preparation and workmanship, class room work was conducted in several places last winter. This work will be extended next fall.

Correspondence courses, the next step in educational evolution, and the solution of the educational problem of most industrial workers, are also now available. These, too, are based on the textbooks. The first in the field was the Canadian Correspondence College, conducted by the Industrial and Educational Publishing Co., Ltd., publishers of the Pulp and Paper Magazine of Canada. Almost simultaneously with the enrollment of the first students in the C. C. C. the University of Wisconsin announced similar courses.

The Canadian Correspondence College has several other courses in preparation. The department known as the School of Pulp and Paper Making offers 4 courses in Pulp Making and 4 courses in Paper Making, besides a complete course in all branches. The instruction embraces High School Mathematics and Science for those who have not qualified in the preparatory branches. The faculty includes a score of practical man of outstanding ability, besides a number of scientists and teachers of high standing.

The organization and work of the School of Pulp and Paper Making is done under authority of the Canadian Pulp and Paper Association and with the assistance and supervision of a special committee of the Association.

Our American friends have the advantage of government support, both from the Nation and the State, by co-operation between the U. S. Forest Products Laboratory and the University of Wisconsin. The course is sponsored by the Technical Association. But independence in respect to state aid is not likely to be a handicap to the Canadian enterprise. Descriptive literature is now in press and information will be sent on application.

ONTARIO APPRECIATES OPPORTUNITY

The department of Lands and Forests of the Province of Ontario is a firm believer in advertising and makes use of the press both to announce opportunities for investment and for the education of the public as to their obligation with respect to public property. The opportunity for thus enlisting the service of various publications, is particularly important with regard to the fields covered by the department of Lands and Forests. Not only does this department have charge of the sale and renting of crown timber and other lands, but there rests on the department the obligation to arouse in the mind of the public, a feeling of responsibility for the preservation of their inheritance. The idea that forest fire protection is essentially a matter of rangers and fire fighting equipment, is now pretty generally discounted. Those most closely in touch with the situation, realize that the way to protect the forest is to prevent fires from starting. Once a fire is really under way, human efforts are practically futile. A great majority of fires in the woods are started by human agencies and are principally the result of human carelessness. The basic cause is apparently twofold. On the one hand, one class of people who go into the woods do not consider the value of the forest nor realize that they are part owners of it. On the other hand, another class of people do not realize the danger of fire nor appreciate the enormous damage which can result because of their carelessness and the consequently feel no particular responsibility for their own actions.

The Ontario Department of Lands and Forests has very wisely undertaken to educate the public to the seriousness of the timber situation and to impress upon the people the sense of responsibility and obligation that will result in less carelessness and more trees. It is a big problem and an enormous task but perseverance on the part of the foresters and a growing sense of appreciation and responsibility on the part of the public will achieve the desired result. The department can rest assured that the press will heartily support every effort that is made towards conservation of the forests and will welcome any opportunity to assist in this important work.

THE ONTARIO TIMBER ENQUIRY

A long time ago, now almost in prehistoric times, it was suspected that the Province of Ontario was not getting what was coming to it in return for the sale of certain timber limits. An investigation was ordered and a commission appointed to look into the matter. After a long and tedious investigation, report has been made and recommendations submitted to the people of Ontario. It appears that a department of the province disposed of certain timberlands without due regard to certain provisions of the law and it appears further, that certain companies in reporting on their operations to the Government, neglected to have their reports sufficiently accurate as to the quantity of material taken out of the forest. In both these respects, the people of Ontario have been the losers; it is likely that some of the losses can be redeemed and it is quite certain that future losses along similar lines can be avoided by following certain recommendations of the commission for re-organization of the department in question. The administration of such a big business as the forestry branch of a province covering such an enormous province as Ontario, is a big proposition. It is unfortunate, though not entirely unexpected, that mistakes are occasionally made in carrying on such a business. The report of the Riddell-Latchford Commission has pointed out some of the mistakes that have been made and recommendations are submitted which ought to be a pretty safe guide for the future. It is quite likely that a thorough investigation into the operations of other departments and similar departments in other provinces would show similar if perchance smaller discrepancies. The great lesson which it seems is to be learned from the findings of the commission is that the resources of the people are not returning to the people the profits that should come to them from a careful administration of their public business. It is to be hoped that these matters will be set right and that in the future there will be no need for a similar investigation.

As we go to press, a despatch is received from St. John's, Newfoundland, that the big pulp and paper proposition for the Humber River region by the Armstrong, Whitworth Co. and the Reid-Newfoundland Co., is revived. Premier Squires is said to be in England in connection with the project. Definite information will be awaited with interest.

A dose of adversity is often as needful as a dose of medicine.
— Forbes.

Alkali Recovery In The Sulphate Process*

By CLINTON B. TEXTOR

Introduction

The sulphate process of pulp and paper making is the latest to be developed and in consequence it has comparatively little published data of good authority, most of the literature on this subject being of a descriptive or speculative nature. This article then is of necessity based on personal experiences and observations in a few mills which I believe may be taken as typical of American practice.

In considering the recovery of alkali, this paper does not limit itself to a discussion of the design and operation of the "Recovery Room", by which name we usually refer to the room containing the smelters and incinerators, but to all those features which affect recovery from the time the chemicals enter the digester to the time they are returned there to be used again.

Digester Room

The principle bearing of the cooking operation upon the recovery process is in regard to the dilution of the liquors, which in turn determines the amount of work that will subsequently have to be done by the evaporation equipment.

As by far the greatest proportion of sulphate pulp made in this country is used in the manufacture of kraft papers, in which a high color is not essential, the usual procedure is to add to the chips in the digester sufficient chemicals in the form of white liquor to perform the cooking and to add black liquor to make the total volume of liquids sufficient to cook all the chips. In this way the mill is spared the evaporation of a volume of water equal to the volume of the black liquor added, with the equivalent saving of heat.

The use of black liquor in the digester has another effect on the recovery, of which we have no explanation. When, for any reason, no black liquor is used in cooking, it soon becomes difficult to keep the incinerators producing the desired quality of black ash, although they are kept supplied with liquor of the same concentration as before.

For the ordinary practice, figures as low as 1½ and as high as 3 pounds of steam have been given as necessary to cook one pound of pulp; personal experience has indicated that 2 to 2¼ pounds of steam were used, depending upon the atmospheric temperature, the moisture in the wood and other factors. The difference between the maximum and minimum figures applied to a 50 ton mill would mean a difference of 75 tons of water to be evaporated per day, which would require 65 H.P. under average conditions.

The use of indirect steam in cooking would, of course, meant a great saving in the water which would have to be evaporated. This method, however, presents mechanical difficulties and its adoption depends on how well these difficulties are solved. A preliminary drying of the chips has also been recommended as a means of reducing the dilution of the black liquors, but unless some source of heat which is otherwise wasted is available for this drying, it is not probable that chip dryers will be widely used for the purpose of increasing concentration, as this concentration can doubtless be accomplished more efficiently with the apparatus now employed.

Diffuser Room

The washing of the pulp represents a very important step in the recovery process as it involves not only dilution of the liquors, but considerable losses of alkali. The majority of modern mills wash their pulp in diffusers, but the diffuser capacities vary so much that it is very doubtful if any practice can be considered standard. Some mills operate very successfully with two diffusers per digester while others have as high as four. Perhaps the commonest arrangement is about three diffusers per digester where each digster blows every four hours. In a mill so equipped, about ten hours can be allowed for the pulp to be washed and the diffuser emptied.

In a typical mill having ten hours for washing, the diffusers are operated in pairs. When a charge is blown into one diffuser, it is first washed with weak black liquor from its mate, the black liquor coming from the fresh charge, testing at first 12 or 13 deg. Be., is sent to the evaporators until the test has dropped to 6 deg. Be. when it is held until its mate has received a blow. This scheme will keep the evaporators supplied with a 10 deg. liquor. In the meantime, the mate has washed down to 0 deg. Be. when it is considered sufficiently free from alkali; it is then disconnected and emptied and if the last blow has not been washed down to 6 deg. the washing is continued with water until the point is reached.

The above mentioned change in the density of the black liquor received from the digester and delivered to the evaporators, from 13 deg. Be. to 10 deg. Be., means that to every gallon of black liquor received with the pulp from the digester, almost a gallon of water is added before it is delivered to the evaporators.

In a plant in which the digesters were heated with indirect steam and which has four diffusers per digester, the black liquor was consistently delivered by the diffusers at a concentrationof 16 deg. Be.

The losses of chemicals during the washing is not so easily estimated though it is probable that the losses at this point are considerably greater than is ordinarily supposed.

Evaporator Room

Evaporator operation is one which is fairly well standardized in its general application, but the conditions of the several sulphate mills are so different that hardly two are operated alike, due to their receiving and delivering liquors of widely varying concentrations.

A quadruple effect evaporator receiving black liquor at 10 deg. and delivering it at 20 deg. indicated a consumption of 2½ lbs. of steam per pound of pulp produced, but this figure is not entirely reliable as both live and exhaust steam was used and due to peculiar local conditions, some of the meter readings were questionable.

Mills using indirect heat in cooking usually operate without any vacuum evaporators.

Recovery Room

The function of the recovery room is to receive black liquor from the diffusers or evaporators, make up for losses of alkali in the cycle by the addition of salt cake, and deliver to the causticizing department the so-called green liquor, a solution of sodium carbonate, sodium sulphide and minor proportions of other substances. The equipment for this purpose is usually arranged in units consisting of a disc evaporator, a rotary incinerator, a double smelter and two dissolving tanks, one for each side of the smelter. There is a serious lack of scientific information on almost all features involved in recovery room operation, and practice today is based almost entirely on what experience has shown to give the best results in any particular installation. We can find no data regarding the heat available or required in the operation nor the temperatures which should give the best results.

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* From a pamphlet published and distributed by Alberene Stone Company, 223 East 23d Street, New York City.

Disc Evaporators

The favorite type of disc evaporator consists of a concrete or steel box equipped with horizontal shafts set across the direction of flow of the gases. The shafts carry a number of circular steel discs at right angles to its axis, the diameters being from 6 to 8 feet and the number per shaft being such as to give a total surface of about 2,000 sq. ft. From 2 to 4 of these shafts are used; while it may be that differences in local conditions are responsible for the following, it seems probable that best results are obtained with three shafts. In an installation of four shafts it was found that liquor of the desired concentration could be delivered more rapidly if the last shaft did not revolve, indicating that after passing the third shaft the gases were saturated with moisture at a temperature higher than that of the entering liquor and that the last shaft was really acting as a condenser.

A three shaft evaporator was able to keep the incinerator supplied with a 30 deg. black liquor concentrated from a 16 deg. liquor whereas under similar conditions, a two shaft evaporator had to be supplied with 20 deg. liquor to obtain the same results.

The speed of the shafts is not uniform in the several operations, varying from 8 to 20 R.P.M.; as long as the speed is sufficient to prevent caking of the liquor upon the discs and not high enough to cause excessive splashing, there is no evidence that the rate at which the discs revolve has any bearing upon efficiency of recovery. The direction of revolution is such as to keep the liquor moving forward towards the hotter part of the evaporators.

Incinerator

From the disc evaporators, the liquor, as indicated at a concentration of about 30 deg. Be., flows or is pumped to the rotary incinerator. The sizes of rotaries in use vary over a wide range both in length and diameter and as incinerator operation does not lend itself well to any measurement expressable in numbers, the comparative value of the several sizes is largely a question of the operator's opinion. However, it seems to be agreed that the best sizes are 9' x 30', 10' x 25', and 11' x 20'; good results can be obtained with any of these rotaries.

The incinerators are variously lined, some using fire brick in the forward end and others are operated without any lining whatsoever in the back end. A lining of two courses of ordinary building brick set on edge will stand 18 months' constant operation if well laid and such service is generally considered satisfactory.

Smelters

The smelters constitute probably the most troublesome feature in all pulp making and today there is probably no one construction that is decided upon as standard even for one mill; in the rebuilding of almost every furnace, some new features are incorporated which seem to be warranted by experience. There is, however, a certain general type which is quite widely used; this is due so-called "Double Furnace" which is essentially a single furnace with two feed holes, two outlets and a dividing wall in the center.

The furnaces are about 5' x 6' inside and are placed end to end; the dividing wall is about two feet thick and is built up to about three feet below the base of the furnace arches. The floors of the furnaces are sloped three ways, toward the outlet, with a pitch of about 2 inches per foot. The arches of the furnaces are so located that the top of the arch comes six inches to a foot above the firing floor, giving five to eight feet inside of the furnace under the archkey. The arch used has a radius equal to its span, the key running lengthwise of the furnaces, and is supplied with a feed hole about 12" x 16", at about the center of the furnaces.

There is a gap between the arches of the furnaces at the center over which is built a common flue which conducts the gases to the incinerators. The gap between the arches and width of the flue vary over a considerable range, which is to be expected as in some installations this superstructure is considered merely as a flue whereas in others it is built as a combustion chamber. With the long rotaries, best results seem to follow the use of a narrow flue, about 3 ft. wide, while with the short rotaries of large diameter, the most noticeable difference is in the life of the flue, which also seems to place the advantage with the narrow flue.

The brick work at the point of delivery from the flue to incinerator is sometimes protected from mechanical injury by surrounding it with a cast-iron collar. This device, by allowing the brick work to be suspended gives more space for black ash between the rotary and the furnace.

The best material we know of to date for the furnaces is a soft, quartz-free soapstone. Walls and floors made of this material, 12 inches thick, last from 15 months to two years. The arches of soapstone do not last as well, one 8 inches thick giving about 6 months' service which is 50 to 100 per cent more than could be derived from the same thickness of fire brick, thought the latter material is widely used for these arches.

In the flue there seems to be comparatively little corrosion due to chemicals, and fire brick has been found to be immensely superior to soapstone. This part of the smelter is relatively the shortest lived of all, but this seems to be due not so much to the direct effect of the heat as to having its foundations undermined. The side walls of the flues rest on the furnace arches near the open ends where gases turning from the furnaces upward into the flue wear off the edge of the arch and remove the support from under the wall; by keeping the edges of the furnace arches in good repair and by giving the side walls of the flue an independent support by means of a separate arch, such a wall 18 inches thick can be made to give at least six months continual service.

Air Pressures

The above figures relative to furnace life apply to an operation in which air was supplied to the furnaces under a pressure of 7 to 8 inches of water through three 3-inch water cooled nozzles. The nozzles, all pointing toward a point in the center of the furnace, were located two in front and one in the rear and inclined downward about 3 inches to the foot, their ends being about 2 feet apart inside the furnace and about a foot above the floor.

Just what is the relation between air pressure and reduction efficiency, life of furnace, alkali losses, etc., is a question which has not been answered except for individual mills, which have found the pressures at which they can operate most economically.

It seems more reasonable that the rate of air delivery rather than the pressure of delivery is the important feature, for the pressure will be affected by the depth of the fuel bed, obstructions in pipes or nozzles and the condition of the black ash. However, we do not know of any mill in which the air is being metered, except insofar as in a mill where the black ash is kept of uniform consistency and the fuel bed at a constant level the pressure of delivery may be taken as a measure of the volume of air blown in.

We know in a general way that on increasing the air pressure within certain limits the capacity of the furnace is increased; that the temperature is increased; that there is less danger of chemicals running out of the furnace unchanged and more danger of the salt cake, after being reduced to sulphide being reoxidized to sulphite or sulphate; that the sulphide is more apt to be driven off as a vapor and alkali to be carried mechanically along with the gases; that with the higher temperatures so produced wear on the furnace becomes greater; these things we know in a general way but we do not know the specific points at which they begin nor how fast they go, and though some plants have worked out their own salvation very satisfactorily, they have found their best operating conditions by their trials and experiences with their own peculiar equipment.

The function of the furnaces is to receive black ash and salt cake, burn off the organic matter at the same time reducing the salt cake to sulphide and to deliver the molten mixture to the dissolvers. With good operation, 90 to 93 per cent of the salt cake is reduced to sulphide and reduction figures as high as 98 per cent have been noted. As the salt cake has no part in the cooking operation but is subject to the same percentage of loss as the other chemicals it is important to obtain as high a reduction as practicable.

The molten chemicals leave the furnaces through an opening at the bottom of the front wall and run in a spout to the dissolving tanks. These spouts are sometimes built of fire brick or soapstone, but for both economy and ease of operation water cooled iron spouts are preferable.

There is not much of importance to note in regard to the design of dissolving tanks. They are supplied with agitators, a sludge clean out opening in the bottom and a liquor outlet in front, a foot or so above the bottom. Except that it is sometimes interesting to compare the capacities of several furnaces, which is easiest if each dissolving tank holds enough for one caustic tank, or that the two dissolving tanks of one unit have such capacity, the size of these tanks is not very important. The liquid supplied the dissolving tanks is usually the wash from the caustic room; if for any reason appreciable quantities of lime sludge, are returned with the wash, the resultant strong liquor after causticizing is found to settle very slowly; the explanation of this is not evident.

A recovery unit such as has been described consisting of a two shaft disc evaporator, an incinerator with 600 to 700 sq. ft. surface inside the lining and a smelter consisting of two 5 ft. x 6 ft. furnaces with suitable dissolving tanks would be able to receive black liquor at 19 or 20 deg. Be. and deliver green liquor enough for the production of 30 to 33 tons of kraft pulp per 24 hours. The black liquor should supply all the fuel necessary except in starting the fires in the furnaces; every where resinous woods are being pulped the black liquors have a higher heating value which permits the recovery units to operate on liquors of lower initial concentration.

There is considerable difference of opinion as to the amounts of alkali lost in the furnace room, but it seems reasonable that a considerable proportion of the total losses occur in this department, especially when we remember that the losses in the soda process are very much smaller though the same equipment and procedure is there employed except in the furnace room; it is true that the majority of soda mills wash the pulp in open pans but it is very improbable that the losses in such an operation are less than in the use of diffusers.

Except for leaks and spills due to accidents or carelessness, there seems to be only one way to lose alkali in the recovery room and that is up the stack. Certain data of experiments with a Cottrell precipitator applied to stack gases have indicated that losses through this channel are considerably less than is expected from the above comparison with the soda process, but these data were neither authentic nor compelte.

Causticizing Room

The causticizing room is equipped with 5 or 6 tanks of the same size and construction, the number depending upon the number of times it is desired to wash the sludge. Each tank is supplied with an agitator, a sludge clean out, a basket for the lime and a swing pipe for drawing off the clear liquor.

The best method of removing the alkali from the sludge is by a progressive washing. In an installation fitted with six tanks, the first wash was sent to the dissolving tanks, a second wash for making a first, a third for a second, and a fourth for a third, the fourth being made with water. This system gives ample time to wash the sludge out of a tank after the fourth wash has been drawn off.

There is no special reason for sending a strong wash to the dissolving tanks and so it is the practice in some mills to use a very strong solution for causticizing and then mixing the first wash with the clear liquor before sending it to the digester room.

The concentration at which the green liquor is sent to the causticizing room varies in different operations from 16 deg. Be. to 24 deg. Be., the proper strength depending upon local conditions; the same applies to the amounts of lime used per unit of alkali. A dilute solution and an excess of lime mean a higher percentage causticity but they also mean more water to evaporate, larger storage tanks and a higher lime bill; on the other hand, incomplete causticization involves the carrying around of quantities of sodium carbonate which is inactive in cooking but which suffers the same shrinkage as the other chemicals.

It is considered good practice to causticize a 20 deg. Be. liquor using 50 to 60 lbs. of lime per 100 lbs. of sodium carbonate. This will give a white liquor of about 83 to 85 per cent activity (activity being caustic plus sulphide divided by caustic plus sulphide plus carbonate) which is generally acceptable; this represents a lime consumption of about 600 lbs. per ton of pulp.

The causticizing is done at a temperature of from 90 to 95 deg. C.; this has been found to give as good results as at a higher temperature and minimizes the danger of boiling over and scalding the operators.

The time that the agitator should be kept going and the time which should be allowed for settling depends upon the quality of lime available and must be determined by trial as chemical tests are of little aid in foretelling these factors, except in such general terms as that a high purity calcium lime with little iron or magnesia should be used and that as far as possible air-slaking should be avoided, as air-slaked lime contains a considerable proportion of finely divided calcium carbonate which not only is valueless in the chemical reaction of causticizing but its presence retards the rate of settling.

Theoretical considerations indicate that tall tanks of small diameter should be used for settling as they would speed up the settling and permit a sharper separation of liquor and sludge but since tanks 14 feet in diameter by 10 feet high can be operated with a loss of less than one per cent of the alkali it is quite probable that questions of space, floor levels, metal, etc., should be given first consideration.

General

The proportion of chemicals used in one digester charge which passes through the recovery cycle and is returned to the digesters for reuse, expressed in per cent is the percentage of recovery. As the total quantity of chemicals in circulation should be kept constant, the quantity of salt cake (and soda ash, where it is used) required for this purpose is then the equivalent of the losses; the losses per digester charge expressed as a per cent of the total chemical charge and substracted from 100 is the usual way of estimating recovery. Eighty per cent is considered good operation and while rcovery over 80 per cent is being obtained, lower figures than 80 per cent are more common.

In cost accounting the salt cake consumption is usually reported in pounds per ton of pulp made, but this figure is not the equivalent of per cent recovery because the chemical charge per ton of pulp varies as much as 50 per cent in various mills depending on the time allowance per cook, steam pressure, grade of pulp, etc., which makes it entirely possible that a mill recovering 80 per cent may use more salt cake per ton of pulp than one in which only 75 per cent recovery is being realized.

In considering recovery as a whole, there are, besides a mass of details and special features, two main principles involved; first, prevention of dilution, and second, prevention of losses. Of the two, the latter is the more important and except for the minor and more obvious ones, the causes are harder to detect and remedy. This is especially true in regard to the furnaces where there is today probably the greatest room for improvement.

LABOR ORGANIZATION IN CANADA, 1921

The information contained in the Eleventh Annual Report on Labor Organization in Canada, covering the year 1921, which has just been issued by the Department of Labor, shows that trade union membership has suffered a heavy loss during the year. The total membership of all classes of trade unions in Canada at the close of 1921 stood at 313.320, comprised in 2.668 local branches, and indicates losses during the year 1921 of 60.522 in members and of 250 in branches. Although a heavy decrease occurred in the following of international organizations, over 71 per cent of trade unionists in Canada belong to this class. There are in all 98 international organizations having one or more local branches in the Dominion, the aggregate for Canada being 2.223, with a combined reported membership of 222.896. These figures show three less international organizations operating in Canada and losses of 232 in branches and 44.351 in members. There are 264 local branches, with a membership of 24.980, of what are non-international bodies, a gain of five in branches, but a decrease in members of 296. The number of independent units is 27, three less than in 1920, and the reported membership 15.644, a decrease of 15.545. The national and Catholic unions number 120, four less than reported in the previous year, and the total membership was given at 45.000. The local units of the One Big Union number 34, a decrease of 17, and the membership was understood to be approximately 5.300. The membership of all classes of organized labour in Canada, as reported to the Department for the past eleven years, has been as follows:

1911	133.132	1915	143.343	1919	378.047
1912	160.120	1916	160.407	1920	373.842
1913	175.799	1917	204.630	1921	313.320
1914	166.163	1918	248.887		

Benefits Paid by Central Labor Organizations.—Of the 98 international organizations operating in Canada, 75 made payments for benefits, the aggregate disbursements being $24,089,836, an increase of $4,626,226, over the amount expended in 1920. The payments for each class of benefit were as follows: Death benefits $9,674,060; Unemployed and travelling benefits $423,031; Strike benefits $10,161,987; Sick and accident benefits $3,081,039; Old age pensions and other benefits $749,719.

Four of the central non-international organizations made payments on account of benefits, the total being reported at $20.775, of which $16.440 was for death benefits. This is the highest expenditure ever made by the head offices of these bodies for benefit purposes.

Benefits Paid by Local Branches.—In addition to the expenditures of the Central bodies a statement is also published in the report showing the amount paid in benefits for the year 1921 by local branch unions in Canada to their own members. The amount disbursed aggregated $1,503,555, an increase of $1,179,400 over the previous year. The expenditure for each class of benefit was as follows: Death benefits $197,306; Unemployed benefits $55,557; Strike benefits $1,046,137; Sick benefits $129,211; Other benefits $75,344.

Other Features of the Report.—In addition to the statistics furnished(the report contains much general information as to the activities of organized labor in Canada as well as references to important labor events in other countries. As a directory of trade unions the report is very complete, containing particulars of every known local trade union in Canada, and also lists of central organizations and delegate bodies, together with the names and addresses of the chief executive officers for the year 1922.

A chapter in the report is devoted to a class of organized labor movement, and include mainly associations of school teachers and government employees. In all there are 41 such bodies having a combined reported membership of 43.298.

WHY I GO TO CHURCH..

By FRANK CRANE

I go to church because, as a rule, churchgoers are the most conscientious, high-minded, honest, kind and law-abiding part of society. Of course, there are low, even vicious church members. Being composed of human creatures, the church naturally is not free from human faults. But **AS A RULE**, the unclean, the brutish, the criminal and the preverted classes are not churchgoers

The various creeds do not bother me. I find that all sects stand for certain things which they have in common. In any church there is emphasis upon these things: Love for mankind, reverence toward Deity, self-discipline, unselfishness, honesty, conscientiousness, purity, loyality to conviction, duty to family and all those traits which go to make up a real man. These things always have been in the church, they always will be, they are those elements against which the gates of hell shall not prevail.

In the church I find the frank acceptance of man's immortality. I like that outlook. Any ethics is impotent when based on man as merely a thinking animal. In the church is the best conception of the nobility of a human being.

It is estimated that 105 million matches are used every day in Canada, or twelve to each person.

A Dictionary of Pulp and Paper Mill Terms

(Continued from last issue)

Outs, Outsides. The sheets on the outsides of packages, usually slightly damaged. Also applied to poor, specky sheets of hand-made paper sold separately.

Outside Reams. Reams containing two quires of retrees: one at the top and one at the bottom. The price of "outsides" is considerably lower than "good."

Overrun. Paper made in excess of an order. The amount of overrun acceptable is limited by trade agreements.

Oxalic Acid. A dibasic acid, $C_2 H_2 O_4$, obtained from wood by fusion with soda and treatment with lime and sulphuric acid. Oxalic acid is poisonous.

Oxford Bible. A special rag paper, strong, opaque, and thin, prepared by careful beating of selected rags.

Oxyacetylene Welding. See **Autogenous Weld.**

Oxycellulose. A white powdery substance produced by treatment of cellulose with oxidizing agents such as strong bleach.

Oxygen. An element: Symbol O, At. Wt. 16. The active component of our atmosphere (nearly 21 p.c. by vol.) Water is nearly 89 p.c. oxygen by weight.

Ozone. A modification of oxygen, having three atoms of oxygen in its molecule in place of two. It is not very stable, and two molecules of ozone readily break up into three molecules of normal oxygen, or combine with any readily oxidizable matter. This makes ozone a valuable bleaching agent.

P

Padding. A process of coloring paper by application of dyes to the surface, either at the calenders or in a vat part way down the driers.

Paddle. An instrument used to move stock lying in the bottom of the beater to bring it into contact with the roll. It is a straight wooden pole about ten feet long, with a flat end like a paddle about four inches wide.

Pamphlet. Printing paper of a little quality than news—in several grades and used as the name suggests. Also tinted and used for covers of pamphlets, etc.

Panel Boards. Several compositions are used: from two to six-ply pulp boards to tough thick leather boards, depending on uses. See **Wall Board, Leather Board, Plaster Board.**

Paper. Any substance composed of vegetable fibers suitably felted (as distinguished from textile fabrics, which are woven) to form a sheet. Chronology of materials used:

Palm leaves	up to B.C. 2000
Bark of trees	about B.C. 2000
Papyrus	as early as B.C. 2400
Parchment and skins	about B.C. 200
Rice and bamboo stalks (in China)	about A.D. 200
Rags known in China,	before A.D. 200
Rags brought to Europe by Moors	A.D. 1000
Cotton paper known in England	A.D. 1300
First mill in England, Tate's	A.D. 1498
Spielman's mill, built at Dartford	A.D. 1588
Whatman's mill, built at Maidstone	A.D. 1760
Robert's Machine invented	A.D. 1799
Fourdrinier's improvement in operation	A.D. 1804
Straw used	A.D. 1858
Esparto introduced by Routledge	A.D. 1852
Wood pulps introduced by Tilghmann	A.D. 1866

See R. W. Sindall's, "Elementary Manual of Paper Technology," for other chronological data.

Paper Machine. The machine devised by Louis Robert in 1799 and as improved by Fourdrinier in 1804, upon which the prepared stock is formed into a sheet and dried as finished paper. It consists of four main parts:

(1) **Wet End**
- (a) Flow box, apron and slices.
- (b) Wire, breast-roll, table-rolls and guide rolls.
- (c) Deckle, straps and pulleys, suction boxes and dandy.
- (d) Couch rolls, or suction couch.

(2) **Presses**

One or more with their accompanying wool felts and felt rolls.

(3) **Dryers**

With top and bottom dryer felts in one or more sections.

(4) **Winder End**

With calender, reels and winder (Sometimes, especially in writing paper machines, there is provision in the dryer section for top sizing by passing the sheet when practically dry through at sizing bath, between rolls and back onto the remainder of the dryers.)

With little change of principle, the machine used today is practically that first successfully used by Fourdrinier — changes have affected size and speed chiefly.

Paper Mulberry. A tree found in Japan, the inner bark of which is used for papermaking.

Paper Sizes. See **Sizes of Paper.**

Paper Varnish. A special thin varnish used to render paper labels waterproof and give a glossy appearance. Bookbinders use a varnish made by dissolving three parts of gum mastic in methanol, and adding one part bleached shellac. Ordinary paper varnish is: Gum Sandarach, 5 parts; Venice turpentine, 3 parts dissolved in Methanol.

Papier Mâché. Waste papers pulped, mixed with clay and rosin, pressed into moulds, or stamped with dies to form trays, plates, etc.; often given a high surface with varnishes.

Papyrine. An imitation or vegetable parchment prepared by dipping unsized paper for thirty seconds in strong sulphuric acid, afterward neutralizing by dipping into ammonia water.

Papyrus. A reed-like plant grown in Egypt, and used by the ancients as the source of a form of paper, which was made from the stem by beating, thus separating the fibrous layers, pasting them at irregular angles to form a sheet.

Paraffin

(1) Properly, any of the members of a series of compounds differing from each other by CH_2, having a general formula $C_n H_{2m} + 2$. So called because of great stability of these compounds.

(2) Paper which has been treated with paraffin wax to render it waterproof.

Paranitraniline Red. A red produced or developed on fibers by treatment first with betanaphthol, drying, and then developing in a solution of diazotised paranitraniline.

Parchment

(1) Skins of sheep, goats, etc., prepared for writing, before the advent of paper.

(2) Paper prepared in various ways to imitate parchment. Long beaten rags make the best grades, but wood pulp may be used. There is no filler. Imitation parchment.

(3) Paper unsized, dipped into sulphuric acid for a short time and the acid subsequently washed out by water. This must be thorough. Vegetable parchment.

Pasteboard. Board covered by lightweight pastings.

Pastings. Papers of various qualities and light weights used to cover middles or to line boxes. Frequently it is colored, often glazed after pasting.

Pattern Papers. Strong natural-colored tissues, well-felted and calendered, chiefly sulphite, with or without a little rosin size—used for dress patterns.

Pawl. A small piece of metal having a hole at one end through which a pin runs. It is free to move on the pin, and its free end, which is pointed, engages the teeth of a ratchet wheel to prevent back motion as on clock springs. See **Ratchet.**

Pearl Filler, Pearl Hardening. See **Culcium Sulphate.**

Peat. Vegetable matter, partially decayed, found in bogs in numerous localities, used as a fuel after drying. Frequently suggested as a source of paper-making material. Only very inferior grades of little strength can be made.

Pecto Cellulose. A compound cellulose.

Pentosans. Derivatives of Pentoses.

Pentoses. Sugars containing five atoms of carbon, derived from furfural yielding hydrocarbons, mainly located in the permanent woody tissues. They are converted into pentosans by oxidation of carbon in the plant.

Perfect Paper. Printer's term for a full ream of 516 sheets.

Perfect Pulper. A conical cased machine with its axis horizontal, fitted interiorally with steel protusions, between which the revolving blades of its axial shaft run. Used for old papers.

Perfecting Engine. Apparatus similar to the Jordan refining engine.

Peripheral. Speed or velocity. The speed in feet per minute on the circumference of a rotating member.

Permanganate. A salt either of sodium or potassium containing much combined oxygen, which is readily exchanged with the easily oxidizable constituents of wood; therefore acts as bleaching agent.

Petroleum. A mixture of various oils of the paraffin series, found in nature in many localities. It is the source of the largest proportion of lubricating and fuel oils and gasoline.

Phenol. The chemical name for carbolic acid.

Phenolphthalein. An indicator, used in volumetric analysis. When a drop of its solution is added to an alkaline solution, the solution becomes a rose-pink. Acid or neutral solutions are uncolored. It is not soluble in water—usually it is dissolved in alcohol, and the solution diluted with its own volume of water.

Phloroglucin. A compound (phloroglucinol) used for detecting lignified fibers in paper. The solution is made by dissolving 2 grams in 50 c.c. of alcohol, and adding 25 c.c. hydrochloric acid. Ground wood shows up pink to rosy red, depending on proportion in paper being examined. Certain dyes, such as metanil yellow, give a red reaction with the hydrochloric acid, so conclusions must not be rashly made. See **Aniline Sulphate.**

Phormium Tenax. See **New Zealand Flax.**

Phosphor Bronze. A bronze containing up to one per cent. of phosphorus. Copper, zinc and tin are other components.

Photochemical Effects. Effects produced by the action of light, for example, fading of color in paper.

Photographic Paper. Specially prepared paper, free from impurities, which would affect the sensitive films spread upon it. It is gelatine sized and strong enough to withstand handling when soaked with the developing and fixing solutions. Well-bleached and well-washed rag is the best stock.

Photomicrograph. A photograph of objects as viewed under a microscope, such as fibers, fillers, etc., highly magnified.

Picea. A genus of coniferae including spruce. See **Spruce.**

Picking. A defect in coated paper resulting from insufficient adhesive in the coting mixture—sometimes called "lifting".

Picric Acid. Trinitrophenol, a yellow dyestuff, not often used. It is explosive and is so used as lyddite, shimose, etc.

Pigments. The finely ground colored mineral or organic material insoluble in water, used for coloring paper before the use of soluble dyes. The coloring value is much less than that of the coal-tar dyes. They frequently produce sheets more highly colored on the wire side, due to the action of the suction of boxes and their own high specific gravity.

Pikepole. A long pole with a soft steel point and hook at the end. The hook is usually straight and at right angles or a little less, to the pole. Used in handling logs in water.

Pinched Post. See **Sizes of Paper.**

Pine. Several kinds of pine are found in North America. All can be used for paper pulp. White pine is the best, but commands a better market as lumber. Jack pine, Prince's pine, loblolly pine, lodgepole pine, and the Southern or long-leaved pine have all been successfully pulped by the different processes experimentally with a little special attention. The long-leaved pine gives best results by the sulphate process, owing to its resinous character.

Pinhole. A defect in paper caused by fine particles of sand or other hard material. When paper containing such particles is calendered, they are crushed, and falling out, leave a hole. If not crushed, they penetrate the fiber and leave holes. Very hard particles may be imbedded in the steel calender-rolls and make a pinhole at each revolution of the roll.

Pitch

(1) Chemically, term often used for the resinous sap of balsam, bark, also for resinous residues left in mechanical chemical pulp of spruce, balsam, hemlock or the pines

(2) mechanically, the angle of inclination of wire on a paper machine: The distance between centers of rivet holes: the distance a screw advances in one revolution measured on the axis of the screw; the distance center to center of teeth in gears, or of links in a chain.

Plaster of Paris. See **Gypsum.**

Plaster Board. Board made of several plies of thin groundwood pulp board pasted with silicate of soda. Sulphite pulp screenings may be used for added strength.

Plate Glazing, Plating. Imparting a glossy surface to paper by pressure between copper sheets.

Plug. See **Core,** third definition.

Plug Bar. See **Core Bar.**

Pneumatic. Having to do with forces exerted by the air, either under compression or extension, as in vacuum pumps.

Poacher. See **Potcher.**

Pocher, Potcher or Poacher. Terms used in Europe. Often synonymous with beater; originally restricted to a beater used for breaking paper-stock and termed a "breaker." In old practice, rags were stirred with a poching (potching) stick.

Polysaccharides, polysaccharoses. Carbohydrates of the general formula $(C_6 H_{10} O_5)_2$, such as starch, cellulose, inulin, dextrine, etc. Their molecular weight is unknown and probably quite high.

Pond. The reserve of stock between the slices and the flow-box on the wire of the fourdrinier machine.

Ponolith. See **Lithopone.**

Pony Roll. A small dryer cylinder which receives the sheet from the last press before it passes to the large dryer cylinders. Also known as "receiving" or "baby dryer".

Poplar. A broad-leaved tree of the genus **Populus:** also called aspen, balm of Gilead, cottonwood. It is a source of excellent, though short-fibered pulp, usually prepared by the soda process. It acts as a filler — increasing opacity and bulking up the sheet. It constitutes a large proportion of book and magazine paper in Canada and the United States, taking the place of Esparto in European practice.

Porion Evaporator. A brick chamber into which the black liquors from soda pulp process run, usually after vacuum evaporation to some extent. Shafts run through the chamber carrying paddles or discs partially submerged. Upon revolving the paddles, the liquor is thrown up to the top of the chamber. Hot gases from the rotary burners pass over the surface, carrying off the vapors and condensing the liquors.

Post

(1) A pile of hand-made paper in wet condition, separated by felts.

(2) See **Sizes of Paper.**

Posters. Printing papers, usually in a variety of colors, used for advertizing; must be strong and well-sized to stand paste, and to some extent weathering.

Pottery Tissue

(1) Thin well-glazed tissues for wrapping pottery.

(2) Special tissues for transferring designs to pottery.

Precipitate. When the addition of one solution to another, or a gas or solid to a solution, causes the formation of insoluble matter, rendering the liquid murkey or opaque, a Precipitate is said to have been formed. For example, when a solution of calcium chloride is mixed with a solution of sodium sulphate, the reaction will result in the formation of sodium chloride and calcium sulphate; the latter substance, being only slightly soluble in water, will appear as a white precipitate.

Precipitated Chalk. Calcium carbonate thrown out of solution, as when soda is added to milk of lime.

Press. See **Paper Machine.**

Press-Board. Glazed boards used to remove the indentations of type by pressing printed paper between them.

Press Rolls. Heavy rolls used to remove water from paper between the wire and the driers. They may be of wood, steel, brass or granite, or be covered with rubber. Pressure is applied by levers.

Presse-Pâte. An apparatus for pressing wet pulp into sheets. Wet machine.

Pressure of Atmosphere. This is approximately fifteen pounds per square inch—the pressure of a column of mercury 760 mm. high, at the sea level.

Priming. Formation of foam in steam boilers or vacuum evaporators.

Printer's Ream. A printer's ream is 21 1-2 quires of 24 sheets, or 516 sheets.

Printings. Term for papers used by printers; nearly all grades of mixtures of mechanical pulp, sulphite and soda; not as well sized as writings and inferior in quality of stock. Should be strong, however, and stand handling.

Profile Paper. Drawing paper on which accurately spaced lines are printed; used by drafsmen for drawing to scale, or for graphic representation of statistics.

Pragram. Paper, largely popular or esparto, for use as name implies. Should be soft and free from rattle.

Prussian Blue. See **Berlin Blue.**

Pulp. The mass of cellulose fibers after elimination of non-cellulose material from wood by chemical means. The fibrous mass resulting from the disintegration of wood mechanically. The term is used for the slush stock containing much water; also for the wet or nearly dry products resulting from pressing or otherwise removing water. Also used in referring to the mass after treatment of old papers by a pulper.

Pulper. Generally refers to some form of mechanical disintegrator for old papers or broke.. There are two types: intermittent or kneader type and continuous. See **Perfect Pulper.**

Pulp Saver. See **Save-All.**

Pulpwood. Kinds of wood adapted to papermaking, such wood as is sold or cut either in blocks or whole logs.

Pyrites. Mineral sulphides. Iron pyrites has been used as a source of sulphur for sulphite pulp-making. When heated in a current of air, sulphur dioxide is produced.

Pyrocotton. Nitrated cellulose, containing 12.5 p.c. nitrogen, hence not so fully nitrated as guncotton. It is used in the manufacture of smokeless powder, photographic films, airplane dope, celluloid and lacquers. It is soluble in a mixture of ether and alcohol.

Pyroxylin. Nitrated cotton or paper. See **Pyrocotton.**

Q

Quired Paper. Paper folded and separated into quires.

Quire. The twentieth part of a ream; therefore, 24 sheets when the ream is 480, and 25 sheets when the ream is 500.

Quicklime. See **Lime.**

Quercus. Latin word for Oak. The white and red oaks, **Quercus alba** and **Quercus rubra** have been cooked experimentally by soda process. They are hard to cook, and the pulp is bleached with difficulty.

Quercitron. A yellow coloring matter obtained from the bark of a species of oak, **Quercus coccinea,** variety **tinetonia.**

Quarto. Abbreviation 4to. The resultant sheet when a sheet of paper is folded or cut into four parts.

Quaker Colors. Dull effects produced by modifying the brighter shades—sometimes by adding black.

R

Race. The water stretch immediately above the intake to water-wheels or penstocks, or at the discharge from same. Head race, tail race.

Racing. Uncontrolled action of an engine resulting from failure of governor, or similar action on a water wheel by the removal of the load.

Rack and Pinion. A device for changing circular motion into linear. The rack is a bar fitted with teeth, which the teeth of the pinion engage.

Radiation. A term referring to the sending out of energy from a body. Light and heat are the most familiar forms; other forms are those emitted from radioactive substances such as radium and thorium.

Radical. In chemistry a group of elements which acts in many ways like a single element, though it does not exist outside of compounds. Hydroxyl, OH; Methyl, CH_3; Carboxyl, COOH.

Rag. Paper stock prepared from rags — chiefly cotton. Linen rags are not sorted out so largely in America as in Europe.

Rags. A very variable source of raw material for paper—once the principal source; now chiefly used in the highest grades of writing papers, blottings and parchment stocks. White rags, requiring less treatment, bring higher prices than soiled or colored rags, which must be bleached and decolored.

Rag Willow. A machine for dusting rags which ahve been sorted and cut up. It consists of a revolving screen provided with spikes. These assist to some extent in the further disintegration of the rags which pass through the machine.

Railway Buffs. Printing paper used for advice sheets and circulars.

Ramie. **Boehmeria nivea,** a plant of the nettle family found in India and China hence called Chinese grass. It is used in textiles; may be found in paper by way of rags. Also called Rhea.

Ratchet. A toothed wheel whose teeth are so shaped that a pawl will slip over them when the wheel revolves in one direction, and engage them to prevent travel in opposite direction. See **Pawl.**

Ratio. The relation between two magnitudes or quantities of the same kind. It is expressed by stating what multiple, part or parts one quantity is of the other. The ratio of A to B, for instance, may be written A: B or A/B.

Raw Materials. The various substances used to make up any finished goods. Wood, rags, wood pulp, alum, rosin, China clays, etc., are raw materials for paper making. Soda, sulphur, limestone, coal, etc., are not properly raw materials for this industry, as they are not incorporated in paper, the finished article.

Reaction

(1) A change brought about by chemical action.

(2) In mechanics, a force acting in opposition to another force or system of forces.

Reagent. Any chemical compound which gives rise to a reaction or chemical change.

Ream. The unit of paper quantity. Reams formerly consisted of twenty quires of 24 sheets each, making 480 sheets. Now more commonly 500 sheets are in a ream, with 25 sheets to the quire. A printer's ream is 516 sheets, 21 1-2 quires of 24 sheets.

Reaumur. See **Thermometers.**

Rechipper. A machine used in a chemical pulp mill for reducing oversize chips and splinters to the required size. A revolving disc with knife blades at its periphery in a case, or with pivoted fingers of steel attached to the periphery, either cutting or breaking the oversize.

Reciprocating. Machinery operating by a backward and forward movement, as in the ordinary steam engine, as contrasted with the rotary or centrifugal pump and the turbine engine.

Recovered Sulphur. Sulphur recovered from alkali wastes, depending on the reaction applied by chance wherein carbon dioxide displaces hydrogen sulphide. Often called "Chance Sulphur."

(To be continued.)

BRITISH TRADE NEWS

(From Our London Correspondent)

London, June 13, 1922.

Judging by the annual report of Messrs. Thomas Owen & Co., Ltd., Ely Paper Works, Cardiff, the newsprint industry in the United Kingdom has had a severe setback by the importation of foreign made paper. For the year ended March 31, last Messrs. Owen say that the results have been disappointing owing to the great drop in values of stock and slackness in trade. But taking all circumstances into consideration, and in view of there being ample reserves, the directors have felt justified in transferring a sufficient sum of money from the general reserve account to enable payment to be made of one year's dividend on the 6 p. c. preference shares and one of 5 p. c., less tax, on the ordinary shares. They recommend these payments. There is a credit balance of £3,062, plus £21,106 brougtht forward, making £24,169. The dividends proposed will absorb £13,500—leaving £4,669 to be carried forward.

Reconstruction

One of the big London printing firms, which absorbs thousands of tons of newsprint and other papers in the year, known as the Amalgamated Press, Ltd., is being voluntarily wound up for the purposes of reconstruction. The object of the reconstruction is to bring the share capital of the company to an amount which will bear a closer relation to its assets and earning capacity. The capital of the new company is £3,800,000 and Sir George Sutton, the President, says the management and continuity of the business remain indisturbed. A large amount of Newfoundland paper finds its way into the machinery of this prosperous firm.

Advertise by Samples

In conjunction with an extensive scheme of advertising in trade papers of the industry, the paper mills of the United Kingdom are issuing samples of their paper by mail. An illustration may be given for Canadians. Every mill in the Dominion runs an advertisment in the "Pulp and Paper Magazine" and printers on a large scale see it in England and elsewhere, as well as the Dominion. It is a special line and a sample—or samples—are sent to the Editor for inspection and notice in the "Pulp and Paper Magazine". This notice is followed up by a despatch through the mail of samples of papers, cheap and expensive, in a neat form to all printers, large business houses and private firms, with the prices plainly marked. The system is continued and results will follow directly and indirectly. Make it a small separate mail department. This week in England, Messrs. Thomas and Green Ltd. have mailed to printers nice specimens of their papers, already advertised, in booklet shape, under the title "Facts of interest to the Printer about 288 mill papers and service". Every printer will read the booklet and Messrs. Green are a thriving, healthy, up-to-date firm, whose workers labor under ideal conditions. Orders must follow such enterprise.

Some Statistics

I have had an opportunity this week of seeing "The Industrial Year Book, 1922", which is published in London. According to information supplied by the Papermakers' Association of Great Britain and Ireland relating to a total production of 10,324,000 cwts—the information can be taken for what it is worth—the percentage of British handmade paper produced is 0.4; machine made tub sized and air dried, 3.8; cigarette and copying tissues 0.3; engine sized, writings and cartridges, fine printings and lithos, 41.2; blotting and plate papers 0.7; news, white mill, wallpapers, 23.5; browns, wrappers and packing papers, 18.4; pulp, mill, leather, glazed, and strawboards, 4.7; wrappings 3.6; others of different varieties 1.8. In 1921 only 73,250 tons of paper were exported, out of a total volume in the country of 982,057 tons, which according to "The Industrial Year Book, 1922" leaves the home consumption somewhere about 908,807 tons. For the information of Canadian pulp men it is mentioned that in order to produce one ton of newsprint "a pile of logs measuring about 4ft square by 11ft high are required" and that "8—10 trees are used to produce one ton of mechanical pulp."

Pulp Prices Easier

During the past three weeks the pulp market has shown more life and prices are coming down within the reach of buyers. Through business has received this stimulus contracts entered into are not of very material size. No doubt the exigencies of the paper industry necessitate a carefulness, as well as a hand-to-mouth policy on the part of buyers. However, sellers are thankful for small mercies and with prices down to a tempting degree the outlook is more hopeful. Easy Bleaching is in demand for all qualities. Soda pulps are rather dull. The groundwood market is still satisfactory and encouraging.

Prices may now be quoted as follows:—Bleached sulphite £18. 7s. b. — £18. 10; Easy Bleaching No. 1. £11. 15s. — £11. 17s. bd.; Sulphite newsprint (or strong) £11; Unbleached Soda No. 1. £11. 15s. 6d.; Soda Kraft £11. 10s.; Ground wood (wet) £3. 17s. 6. — £4; Ground wood (dry) £8.

Paper Industry

The whitsuntide holidays somewhat dislocated business in the paper industry; but taking things in general the outlook is not at all bad. All the mills seem to be "jogging along" with something to do. In some cases mills are working full time. The recent settlement on the wages and hours is also reassuring and a help to business in many ways. It is hoped the steady progress now recorded will not be interfered with by a strike in the printing trade. Things are not running well with the printers, as there is a recasting of wages. However, it may blow over and the steady demand for paper continue. Some of the Scottish paper mills are well supplied with orders.

Technical Examination

I gave a couple of weeks ago a few questions that were put to the papermaking students attending the Battersea School and I have now received a copy of the questions placed before the students recently in the City and Guilds of London Institute examinations. The final examination papers which included papermaking, chemistry, and engineering are interesting and give one a slight knowledge of the tuition received in the schools, which, of course, deal with more than one industry. In the engineering paper one question is worth quoting "15, Discuss the merits of Lancashire boilers and water tube boilers from a paper mill point of view. Assuming that you have an average mill, at what temperature would you expect to find the feed water (a) entering the economisers (b) the boilers? what danger may arise from the careless use of paper machine condensate?" Not a bad question for a student in papermaking. Here is one in chemistry: "27, Why should a paper made from wet beaten stuff require less sizing than one made from free stuff?" Again, "24 How would you detect Smalts, Prussian blue and Ultramarine in paper? Mention any injurious influences that affect the colors of any of these dyestuffs?" In Grade 1 examination there were 12 questions put and in the final examination of three section 28 questions.

"Business At a Profit" Is Box Maker's Slogan

The attendance at the seventh annual convention of the Canadian Paper Box Manufacturers' Association, held on June 26 and 27 at the Windsor Hotel, Montreal, was the largest in the history of the association. The program was mainly of a business character, but it did not overlook the social side. The slogan for the Convention was "Business at a profit," and during the various discussions stress was laid on the importance of trading on lines which will bring a fair return.

The following committees were responsible for the arrangements: Convention, Messrs. C. N. Moisan (Chairman), Standard Paper Box Co. Ltd., Montreal; C. T. Reid, Chas. Reid & Company, Hamilton; B. Sproule, Collett, Sproule Ltd., Toronto; A. B. Meredith, Meredith, Simmons, Ltd., Toronto; F. A. Fielder, The Fielder Paper Box Co. Ltd., Toronto; J. B. Lawrason, Lawrason-Doughty Co., Toronto; W. P. Bennet, Rudd Paper Box Co. Ltd., Toronto; David F. Robertson, Canadian Paperboard Co. Ltd., Montreal.

Entertainment: Messrs. C. deWolf Reid (Chairman), C. deWolf Reid, Montreal; F. R. Thorn, Price Brothers & Co. Ltd., Quebec; W. E. Frankish, Empire Paper Box Co. Ltd., Montreal; J. L. Constantineau, King Paper Box Co., Montreal; C. N. Moisan, Standard Paper Box Co. Ltd., Montreal; Art. Harries, Canada Paper Box Co. Ltd., Montreal; A. B. Meredith, Meredith, Simmons Ltd., Toronto.

Reception:—Messrs. Art. Harries (Chairman), Canada Paper Box Co. Ltd., Montreal; David F. Robertson, Canadian Paperboard Co. Ltd., Montreal; Jas. T. Venables, Chas. W. Williams & Co. Montreal; Ed. Favreau, Acme Paper Box Co. Ltd., Montreal; M. J. Griffin, Standard Paper Box Co. Ltd., Montreal; Louis Lefebvre, King Paper Box Co. Ltd., Montreal; J. A. Moisan (Auto Section), Standard Paper Box Co. Ltd., Montreal.

Honorary Member Entertainment and Reception Committees: Mr. Harry Edwin Roden, New York.

Sergeant-at-Arms: Mr. James Logie, Canadian Paperboard Co. Ltd., Toronto.

The first business on the opening day was an address by Mr. C. N. Moisan, of the Standard Paper Box Company, Ltd, the president. After welcoming the delegates, Mr. Moisan said: "In November last the Association lodged a protest against the increase which the mills made about that time in the price of cheaper grades of board, the Association basing its objection on the fact that the stability of prices previously in force was inspiring the public with confidence to buy, and that the increase would have a reactionary effect by upsetting the stable feeling that had arisen. As the result of the Association's protest, the advance in prices was withdrawn.

Since the last Convention, the Association through the Secretary has made numerous representations to the Department of Customs, towards invoking the Dumping Act on importations of Paper Boxes. There is good reason to believe that such representations have in a number of cases been effective.

The Association has, in a vigorous manner, made representations to the Minister of Customs towards the application of the Marking Act on Paper Boxes and Paper Cartons. There is reason for hoping that when the Government repeals the Marking Act and introduces Orders-in-Council applying the principle of the Marking Act to certain articles, Paper Boxes and Paper Cartons will be included.

Recently, the Ontario Government introduced a bill, which would have placed absolutely in the hands of the Ontario Minimum Wage Board, the determining of the maximum number of hours of labor per week for female help. The Association, through the Secretary, with other public bodies protested against this measure, and as the result of such protest the measure has been satisfactorily modified.

The schedule of piece-work rates was drafted as authorized at the last Convention, a copy of which was addressed to all members of the Association, and which has been highly commended.

At the last Convention your President was delegated to take up with a representative of the Shoe Manufacturer's Association the matter of standard sizes of Shoe Boxes. A table of sizes has since been adopted by the Shoe Manufacturers' Association and a copy of the table was addressed to all the members of our Association with a letter of recommendation for its adoption.

During the past year I am sorry to say that our Active membership has decreased slightly, but this is more than offset by the value of the additions which has been made. On the other hand our Associate membership has increased.

There is no doubt that the worst of the slump is over and that an improvement in most industries has set in but we must bear in mind that the process of recovery will be slow and gradual for some little time to come. We must be prepared to work out our own industrial salvation until a more stable feeling asserts itself in the business world. We are now facing the future with more confidence than we have felt the last couple of years but there is one danger we will avoid if we are wise and that is the danger of accepting the leadership and guidance of those who ignorantly believe that we have completely adjusted ourselves and our methods to meet future problems.

Addresses and Banquet

Following the report of Mr. S. J. Frame, the secretary, the convention listened to a very forcible address by the Rev. Canon Shatford, Montreal, on "Making the best of present conditions." Mr. F. A. Fielder, of the Fielder Box Company, Toronto, spoke on "Promotion of efficiency in the Paper Box Factory." After luncheon the delegates visited Mount Royal, where a group photo was taken. There was only one paper at the afternoon, that by Mr. E. R. Spaulding, of the Cambridge, (Mass.) Paper Box Company, on "Cost, its relation to present day conditions." There was a very bright discussion on suggestions for the development of the Association, the subject being introduced by Mr. Art. Harries, of the Canada Paper Box Company, Limited, Montreal.

In the evening the annual dinner and dance was held at the Windsor. The toasts were few but good. "To Canada," proposed by Mr. C. T. Reid; "The Ladies", proposed by Mr. B. Sproule, and acknowledged by Mrs. C. N. Moisan; and "Our Association", proposed by Mr. W. P. Bennett, and responded to by Mr. J. L. Constantineau. About 120 were present.

The proceedings on the second day opened with further discussion on suggestions for the development of the Association. "The Clean Food Movement" was the subject of a paper by Mr. O. B. Towne, secretary of the Waxed Paper Manufacturers' Association of the United States. Mr. David F. Robertson, Canadian Paperboard Company, Limited, Montreal, spoke on "Quality of Board looked at in the light of the Association slogan, Advance," which was followed by a talk on "Co-operation within the association," by Mr. C. T. Reid, of Charles Reid & Co., Hamilton. At the afternoon session papers were read by Mr. R. Salade, Philadelphia, and Mr. S. J. Frame, the foremen's subject being "New Ideas in Paper Cartons and Paper Boxes."

Niagara Falls, Ont., was chosen as the place for the next convention.

The election of officers resulted as follows: President, Mr. C. Winter Brown, D. F. Brown Paper Box and Paper Company, St. John, N.B., vice-president, Mr. J. B. Lawrason, Lawrason-Doughty Company, Toronto; directors, Messrs. B. Sproule, Collett, Sproule, Ltd., Toronto; G. Hancock, Galt Paper Box Co., Galt, Ont.; L. J. Adjutor Amiot, Quebec Paper Box Company, Quebec.

The last item on the program was an evening dinner and concert at the Clarendon Hotel, Ste. Anne de Bellevue.

MEAD PLANT TAKES VACATION

An innovation in vacations is announced in the mill magazine of the Mead Paper Company, **Mead Cooperation**, by which the mill will shut down for an entire week, from July 2 to 8, and give all vacations of one week or less at that time. Only those needed to make necessary repairs will be retained at work.

The vacation policy of the company is to give three days vacation with pay for all employees who have been with the company for three years, four days for four year employees, one week for those with six to nine years service, and two weeks to those with ten or more years service.

The company announces that the list of those entitled to such vacations has increased to such numbers that it is no longer practicable for vacations to be scattered through the summer, so the entire plant will be closed down during the vacation period. Those wishing pay before the vacation are enabled to get their money before the holidays. Those who are forced to work during the vacation week will be given their vacations later in the summer This is a vacation plan recently advocated by Babson, and which he will follow in his own organization, but the Ohio company is probably the first to inaugurate such a plan in the paper industry.

The same number of the mill magazine which makes this announcement prints a complete list of those entitled to vacations, 191 in all, or 43 per cent of the force at Chillicothe, and gives the time allowed to each on the basis of service.

PAPER, PASTEBOARD, AND STATIONERY IN INDIA

The extent to which India was overstocked with paper in 1920-21 is evidenced by the fact that the value of these imports in 1921-22 was only about a third of the value of paper goods imported during the previous fiscal year—3.25 crores* as compared with 9.12 crores. Imports of paper goods in recent months have been comparatively small notwithstanding the low European prices. The United Kingdom has increased her share of the paper trade at the expense of the United States.—Commercial Intelligence Bulletin.

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* (A lakh of rupees equals about $30,000 and a crore of rupees about $3,000,000 in Canadian currency).

A DEVICE FOR THE STANDARDIZATION AND MEASUREMENT OF THE ROLL PRESSURE OF BEATERS.*

The substance of an Address by Prof. Muller, Darmstadt, before the Society of Pulp and Paper Chemists and Engineers, in Berlin, November, 1921.

Translated and abridged by A. F. Klein and J. L. Parsons, Hammermill Paper Company, Erie, Pa.

In the work carried out in the author's laboratory it became necessary to study the much disputed "specific roll pressure" of beaters. The setting and maintaining of the best suitable specific roll pressure is of great importance for these machines with rolls rotating over a bed-plate. Up to this time two means have been applied to adjust the weight of the roll against the bed-plate: either the roll was lowered by hand to the bed-plate by means of screws and gears, or the roll shaft was placed on lighter bars which could be balanced out by means of weights and thereby increase or decrease the action of the roll against the bed-plate, or, as it was called, working "with partly balanced" roll. In the first case it is impossible to maintain by hand-operation at all times a constant specific pressure between the beater roll and the bed-plate.

In the second case (with partly balanced beater roll) the beater roll in operation has a play in the vertical direction and the specific pressure adjusts itself according to the balancing weights; but its magnitude cannot be determined, especially since neither the roll weight, nor the pull of the belt, as well as the buoyance of the roll, are known and therefore cannot be measured.

The author's invention makes it possible not only to set the rolls according to the most suitable beating pressure for the particular raw material in use, but also to measure the pressure and to control the same for any length of time. The invention consists of a combination of the beater roll journal with a weighing appliance, by means of which the true weight of the roll and the other forces can be balanced out and consequently a beater roll pressure of an accurately determined degree can be produced against the bed plate, so that the specific pressure can be determined and produced at any time by means of the weighing device.

By this double possibility of measuring and controlling, the paper-maker has not only the big advantage of setting the beater (specific pressure) most suitably for a given fiber material for each beater filling, but also the possibility of measuring this pressure and thus establishing the most desirable specific roll pressure for beating stock of unknown properties. This is undoubtedly of the greatest importance in experimental laboratories and mills where a very fine treatment of the fibers is required. The arrangement is comparatively simple and on beaters the roll can be suspended in the existing lighter bars and connected to a very fine working scale (as made by Schenk, in Darmstadt) which gives a very accurate measurement. An electrical device for recording the specific beater pressure adds a new, very desirable control of the beating process.

The degree of variation which exists in practice may be illustrated by the conditions observed in one mill where six beaters of different construction were in operation. Here the specific roll pressure varied from 4.5 to 6.8 kg. per sq. cm.

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* Zellstoff und Papier, Volume 2, No. 1, Jan. 1922, page 22.

Getting married is like eating mush-rooms—you never know whether you have picked the wrong kind until it is too late. —Book of Smiles.

SUGGESTIONS CONSIDERED BY THE JOINT COMMITTEE ON PAPERMAKING FELTS*

If the sizes of felts could be standardized to inches in width and even feet in length the manufacturing costs of the felts would be considerably reduced.

In the felt finishing room standard sizes would mean a standard method of finishing, consequently the finished product would be much more uniform than at the present time. If the paper mills would accept the standard sizes the felts would always be uniform and would give much better results than those specially made up to meet their particular conditions. At the present time some customers ask for felts lightly napped, some medium napped and others heavily napped. If felts were standardized, there would be only one nap.

Standard sizes and designs of felts would mean a great saving in time and labor which, with the present method, is lost in changing to the various sizes and designs of felts. The slight difference in the work that the special felts produce would be more than offset by the advantages gained, such as the decrease in price, more prompt deliveries, the possibility of carrying standard sizes in stock.

There would be less chance for errors in the manufacture of felts, and the manufacturers would be able to concentrate on these standard sizes and designs and work out efficient improvements.

After careful study it has become perfectly plain that a better felt could be made at a lower cost provided there could be eliminated most of the small variations both in size and design, and such elimination would not make any material difference to the users, or at least the difference would be more than offset by the advantages. The advantages that would accrue to the user would be as follow:

First, difference in price: From a study of the cost figures it would be quite safe to anticipate a difference of 10 per cent between those felts which were standardized as to style and design and the others, with a very strong probability of considerably larger reductions to follow.

The *second*, and perhaps even more important aspect to the user, is the delivery question. With proper standardization prompt delivery would be possible with no injustice to anyone. Under the present system the only way the customer can get prompt delivery is to order the felts made up and held. In the past this has proved difficult both for seller and customer because of the general uncertainty of the transaction, but if the standardization could be worked out, enough customers would be using any standard felt to warrant a felt manufacturer carrying a reasonable stock and making quick delivery.

The *third* factor is workmanship. Many of the operations in the manufacture of felts are guided by individual judgment. This judgment can be exercised to better advantage when the same size and design of felt is run through in quantity one after another, than when each felt is different from the last. Many of the operations depend entirely on the eye and judgment of the workman and very considerable improvement would result from such standardization.

All of these factors would work out to the benefit of those customers who are in a position to use standardized sizes and designs and they would not continue to pay for the higher priced work on the individual orders.

By having fewer sizes and designs to make the felt manufacturer would probably be able to concentrate on these and work out efficiencies and improvements more quickly than at present when each mill, and even each machine, takes an individual clothing.

The consolidation of size and design would enable many large paper manufacturers to cut their stocks of felts by the increased interchangeability between machines.

The extent to which such standardization could be carried out would have to be determined by joint action between the felt makers and the paper makers, taking into consultation the builders of paper making machinery for future machines.

As a purely tentative suggestion the following, as to size, is offered:

Length: Variations of only two feet in length in even figures from 24 to 50 feet, then 54 and 56, and from there on, in four foot lengths.

Width: Inasmuch as we are dealing with a very large piece of woolen fabric (the same piece of which, when measured under different conditions, will vary several inches in width) it seems unwise to make modifications for variations of one inch in width because the cost of making these variations is very considerable and the resulting variation is somewhat indefinite. It is suggested, therefore, that variations in width be confined to four inch jumps, or if this is too great, then to two inch jumps.

Design: This question would have to be worked out by the individual felt maker largely for himself but the same general principles should govern all. We suggest, for instance, that two standard designs of bottom board felts, one for board where fineness of finish is necessary and another one where the greatest strength, openness and long life are the prime requisites, and felt marks are not a detriment, would answer the majority of purposes.

In corrugated, sheathing, roofing, groundwood pulp and some others, a single design should be sufficient.

In all this standardization of both design and size, the felt maker would be free to make any deviations from the standard, but at a price commensurate with the increased cost.

This would enable any paper mill to get any kind of felt it wanted, as heretofore, but would put the cost where it belonged.

Inasmuch as each variation of either width or length, according to whether the felt is made joined or endless, necessitates a separate warp, it is evident that this is not economical manufacturing and must ultimately be paid for by the consumer of felts.

SULPHATE PULP FOR NEWS-PRINT

The possibility of using sulphate pulp in place of sulphite pulp in the manufacture of news print was investigated at the paper laboratory of the Bureau of Standards, U. S. A. Various combinations of groundwood, news sulphite, and sulphate pulps were made into news print. Small batches were run and the results were not very conclusive, especially due to the fact that the machine could not be run over 75 ft. a minute, while news-print is nominally manufactured at from 600 to 1,000 ft. a minute. However, as far as the tests made were concerned and not taking into account the slow speed of the machine, it was not thought objectionable to use sulphate pulp for news-print.

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* The work of this U. S. committee was referred to by Mr. E. S. Bates in his address to the Technical Section of the Canadian Pulp and Paper Association. He suggested a similar committee for Canada.

Technical Section

REVIEW OF RECENT LITERATURE

B — Forestry

B-0 The Influence of Forests on Stream Flow. A. ENGLER. **Mitteil. Schweiz. Zentralanst. Forst. VerSuchsw.**, xii, 1-626, (1919); **Botan. Abs.**, ix, 109-110 (Sept. 1921). A detailed account of an experiment undertaken to determine the comparative run-off on a forested area and a non-forested area, with all other conditions as nearly equal as possible during (a) heavy showers, cloud burst, (b) continuous long periods of rain, (c) rapid melting of snow, and (d) periods of drought. -A. P. -C.

B-9 Forest Valuation. F. ERDMANN. **Zeitschr. Forst- u. Jagdw.**, lii, 146-166, (1920); **Botan. Abs.**, ix, 22, (Aug. 1922). A critical study of soil value, cost value, growing stock value, sale value, expectation value, and other important subjects of forest valuations. A complete classified list of kinds of value in forestry is given. -A. P. -C.

B-0 A New Forestry Point of View. KATZER. **Allg. Forst- u. Jagdwzeitg.**, xcvi, 16-17, (1920); **Botan. Abs.**, ix, 25, (Aug. 1921). The author discusses some of the fundamental principles of forestry and presents a rational scheme of co-ordinating all branches of forestry. -A. P. -C.

B-0 R-13 Forestry Associations. STEPHANI. **allg. Forst- u. Jagdwzeitg.**, xcv, 205-208, (1919); **Botan. Abs.**, ix, 32, (Aug. 1921). A suggestive discussion of forestry associations and societies. The need for such societies is outlined, and three distinct kinds of associations are recommended: (1) Associations for the promotion of forestry; (2) Associations which uphold the interest of forest property owners; (3) Associations of forest officers. -A. P. -C.

B-9 Pulp Wood Stands in the Lake States. C. W. BOYCE, U. S. Forest Service, **Paper Trade J.**, lxxiii, No. 19, 50, (Nov. 10, 1921); **Paper**, xxix, No. 11, 28-29, (Nov. 16, 1921). The author gives an average of the best estimates he could get from various sources concerning the remaining supplies of pulp wood in paper making centers of the Middle West. -A. P. -C.

E — Acid Processes of Pulp Making

E-1 The Determination of Sulphur Dioxide and Sulphur Trioxide in Burner Gases R. DIECKMANN. **Papierfabr.**, Apr. 1, 1921. Translation by Clarence J. West in **Pulp and Paper**, xix, 1303, (Dec. 29, 1921). Sulphur dioxide and sulphur trioxide are both determined in the same absorption flask and with the same portion of standard alkali. The absorption flask is filled about three-quarters full with distilled water, 10 cc. of decinormal sodium hydroxide added, and phenolphthalein and methyl orange as indicators. The first color change, from red to yellow, is very sharp. The volume of gas absorbed at this stage corresponds to the volume per cent content of sulphur dioxide and sulphur trioxide. The second color change, from yellow to orange is easily recognized. The second volume (total - first) gives the volume per cent of sulphur dioxide. The method has been compared with Sander's (see this journal, xix, 723, July 7, 1921), Orsat apparatus, and Reich's method. It is claimed to be accurate, simple, does not consume much time, and does not require expensive chemicals such as iodine and mercuric chloride. -A. P. -C.

E-4 Rotary Sulphur Burner Feed. Can. Patent No. 214, 508, J. B. CRANDON, Dec. 6, 1921. The valve controlling the feed of sulphur burners is usually of considerable size as compared with the feed pipe to guard against plugging and as a rule it is open about one-quarter of its capacity, leaving a narrow opening for the sulphur to pass. Owing to the presence of dirt in the sulphur, the valve frequently plugs up, causing a general disturbance of the feed. The patent covers a device for intermittently opening the feed valve wide, allowing any obstructions to be swept out, and then closing it again to its normal position. The opening and closing is obtained by a suitable mechanism driven by the burner itself, so that the valve is opened once for every revolution of the burner. The advantages claimed are steady and uniform feed to the burners keeping the level of the melted sulphur constant, uniform combustion preventing overheating and subliming of sulphur, the flow of suphur can be set to keep the burner filled to maximum capacity. -A. P. -C.

E-5 Pulp Digestion Method. Can. Patent No. 214, 866, AKTIEBOLAGET VAPORACKUMULATOR, assignee of J. K. RUTH, Dec. 27, 1921. Addition to Can. Patent No. 189, 679, April 15, 1919. The cooking is begun with steam from the accumulator and completed with live steam from the boilers. -A. P. -C.

E-0 Cause of pitch Troubles. O. HALSE. **Paper**, xxix, No. 11, 27, (Nov. 16, 1921). From a microscopic research work on sulphite pulp, Halse reached the conclusion that the pitch does not occur in the ordinary fibers (tracheids) which form the majority if the fibers, but only in some smaller and much weaker fibers forming the medullary rays. In cooking the small pitch-containing fibers are partly broken and the pitch exudes and adheres to the ordinary fibers. In this form the pitch is troublesome, but not when it is held inside the small fibers. If sulphite pulp is cooked to a degree that makes it easy bleaching (for instance, bleaching with 10 per cent bleach), much more of the small pitch containing fibers will be torn to pieces and accordingly cause greater pitch troubles on the wire than in cooking strong pulp (e. g., bleaching with 20 per cent.) A. P. -C.

E-0 Some Industrial Uses of Silica Gel. **Pulp and Paper**, International Number II, 112-116, (Dec. 1921). "**Silica Gel**" is made by a patented process from water-glass and either sulphuric or hydrochloric acid. Its possible uses may be grouped under four heads: adsorption from the gas phase, adsorption from the liquid phase, as a catalyst, as a "carrier" for catalytic materials. Of these, the first appears to be of most interest to the pulp and paper industry, for the recovery of sulphur dioxide from smelter gases for the manufacture of liquid sulphur dioxide and from digester relief. (The separation of sulphur dioxide from gas mixtures by means of "silica gel" is covered by Can. patent No. 212, 540, granted to R. H. McKee, July 19, 1921. See this journal xx, 105, Feb. 9, 1922.) Two types of plants (dust type and bed type) have been devised for carrying out the adsorption. These are briefly described. -A. P. -C.

F — Alkaline Processes of Pulp Making

F-2 Utilization of Lime Sludge as an Agricultural Fertilizer. CARL MOE, Minnesota and Ontario Paper Co. **Paper**, xxix, No. 12, 11-12, (Nov. 23, 1921); **Pulp and Paper**, xix, 1192, (Nov. 24, 1921); **Paper Trade J.**, lxxiii, No. 21, 44, 46, (Nov. 24, 1921); **Paper Ind.**, iii, 1287, (Dec. 1921). The author describes the splendid results obtained on a Wisconsin dairy farm by the application of lime sludge from a neighboring sulphate mill. -A. P. -C.

F-4 Furnace for the Dry Distillation of Waste Liquors. Can. Patent No. 214, 773, AKTIEBOLAGET CELLULOSA, assignee of E. L. RINMAN, and G. F. MAGNUSON, Dec. 20, 1921. The liquor is spread out in thin layers on a series of trays on trucks which can run into the distillation chamber, the sets of trays on all the trucks being at the same level so that when the trucks are placed end to end they form continuous horizontal passages throughout the entire row. Heat for distillation, which is carried to a maximum temperature of 500 degrees C., is supplied by electric heaters or by radiators through which hot combustion gases circulate. The heater is in a chamber adjacent to the distillation chamber and a fan circulates the heated air from the former to the latter. -A. P. -C.

K — Paper Making and Equipment

K-7 The Rational Theory of Beating. S. SMITH. **Papierfabr.**, xix, 1184-1189, (Oct. 21, 1921); 1285-1289, (Nov. 11, 1921; 1465-1471, (Dec. 16, 1921); xx, 97-105, (Jan. 29, 1922). The hollander is studied from all angles: efficiency, capacity, power consumption, etc. A formula is deduced for the rate of circulation of the stock in the beater. -I. G.

K-7 Sizing paper with Rosin and Coumarone Resins. Ger. Patent No. 349, 595, G. MUTH. One part of saponifiable rosin is melted with about 10 parts of coumarone resin and the mixture kept liquid until foaming stops. The mass is then treated with alkalies, ammonia, or water glass solution to produce an emulsion. The cooking may be carried out either in an open vessel or under pressure. The use of coumarone or indene resins, or other artificial resins, gives a cheaper, more uniform, and purer product than natural rosin, and the soap obtained is so soluble in water that it can be added directly to the beater. -I. G.

K-10 Engine Sizing with Animal Sizes. Ger. Patent No. 349, 881, BADISCHE ANILIN UND SODA FABRIK. Addition to Ger. Patent No. 331,350. To 100 parts of dry pulp add 0.25 per cent of rosin size, 2 per cent of the animal size or albumen, 4 per cent of "Neradol D" (which is a condensation product of cresol with formaldehyde prepared according to Ger. Patent No. 262, 558) and 1 to 2 per cent. of aluminum sulphate. The paper is then finished in the usual manner. Other animal sizes can be used, as well as other condensation products and various organic substances which precipitate the size. The size is thus rendered insoluble and firmly fixed on the fiber. -I. G.

K-10 Determination of Sizing Quality. (Carson) See **A-14 Page 500 Juse 15, 1922**

K-10 Sizing Straw with Waterglass. A. R. **Papeterie**, xliv, 58-61, (Jan. 25, 1922). Owing to insufficient digester capacity to supply the paper machine in a certain mill, the digestion of the straw carried out at 5 to 6 atmospheres pressure, which removed all the starch and gave too spongy a paper. In order to be able to size the paper, the amount of lime was reduced from 20 to 15 per cent., and 2 per cent. of sodium carbonate was added. After cooking the pulp was allowed to stand in heaps for 5 to 6 days, washing and defibering were carried on simultaneously and 8-12 liters of sulphuric acid (diluted with 4 parts of water) added per ton of pulp. The excess acid was removed by washing another half-hour, and the paper could be sized satisfactorily with 3 per cent. rosin and 5 per cent alum. The excess sulphuric did not interfere with the sizing but affected the durability of the paper if it was to be kept in storage a few months. In order to cheapen the paper, the use of waterglass for sizing was considered. After adding the sulphuric acid 2 per cent. alum was added in the beater, then 10 to 12 per cent. of waterglass (trisilicate) and immediately after 5 per cent of alum. Back water was used exclusively for diluting the stock on the paper machine. The sizing thus obtained was sufficient to prevent fresh meat from soaking the paper and making it tear (most of the paper was used in butcher shops, -A.P. -C.

K-10 The Influence of the 1921 Drought on the Sizing of Paper. E. ARNOULD. **Papier**, xxv, 1-5, (Jan. 1922). Concurrently with the drought which prevailed in France during the summer of 1921, considerable difficulty was experienced in many localities in the sizing of paper. The trouble is attributed to the increase in the hardness of the water owing to the natural concentration of salts in the water, and to the prolonged rise in the atmospheric temperature. The increase in the hardness of the water decomposed the rosin size to a certain extent, but also reacted with the alum, so that a considerably greater amount would be necessary to get the desired results. -A. P. -C.

K-12 The Crane System for Paper Machine Dryers. H. J. BARTLETT, Crane Co., Chicago. **Pulp and Paper**, International Number II, 160-162, (Dec. 1921). A description of the system and a discussion of its merits.-A. P. -C.

K-24 Handling of Paper. Papeterie, xliii, 1029, (Nov. 25, 1921). A brief description of a small one-man truck for the handling of paper in reams. The paper is piled on special raised platforms, the truck is run under the platform, by a simple turn of the truck handle the platform is raised, and it can then be transported where it is needed. -A. P. -C.

K-0 Enigmas of Paper Making. F. J. T. HECKFORD. **Paper**, xxix, No. 11, 19-21, (Nov. 16, 1921). The author discusses a few of the problems which he has run up against personally, such as "acid in paper", the action of acid or alkaline adhesives on inks or pigments applied to paper, the turning pink of some papers (esparto papers), imperviousness to light (for wrapping photographic plates), dentritic growths. -A. P. -C.

K-0 Sidelights on Paper Manufacture. F. J. T. HECKFORD, John Dickinson & Co. **World's Paper Trade Rev.; Paper**, xxix, No. 20, 9-12, (Jan. 18, 1922). A brief discussion of questions of general and technical interest that arise daily in mill and office: watermarks and trade names, mill wastes and effluents, use of waste bleach waters, paper mill odors, hydration of pulp, and contracts. -A. P. -C.

K-0 Portrait Watermarks. DARD HUNTER. **Paper**, xxix, No. 19, 13-14, (Jan. 11, 1922). Brief sketch of the early use of portraits and figures with an account of modern inventions. -A. P. -C.

M-General Mill Equipment.

M-9 Transporting kaolin in Paper Mills. LEONHARDT. **Wochbl. Papierfabr.**, lii, 4336-4337, (Dec. 31, 1921). Description of the method used to transport kaolin from the car to the grinder and then to the dissolving tanks. -I. G.

M-0 Anti-Corrosive Chemical Engineering Plants. Can. Chem. Met., v, 341-342, (Dec. 1921). A brief descrition of "ceratherm" equipment made by Guthrie & Co., Accrington, England. Ceatherm centifugal pumps are designed to handle any corrosive liquid, whatever head or quantity may be desired or whatever liquid may be used. It is resistant to the action of heat, hot acids, cold alkali, solutions of copper salts, liquids containing chlorine, bromine, copper chloride, aqua regia, etc., and has a high crushing resistance. Vats are con-

Contiuned on page 573)

UNITED STATES NOTES

Bids for the construction of a new pulp and paper mill near Monroe, La. for the Southwest Paper and Pulp Company have been opened. The plans for the proposed plant call for buildings and storage area covering in all about 10,000 square feet. The site selected for the mill is an eighteen acre stretch along the Ouachita river and is adjacent to the Missouri Pacific railway. Negotiations are now under way to secure for the company thousands of acres of pulp and timber lands in Northwestern Louisiana. Joseph G. Mayo is president and general manager. According to present plans, modern equipment will be installed in the mill with the view to putting out 100 tons of refined Kraft pulp daily.

An attempt to attack forest pests from the air is being made in New Hampshire by Captain Robert E. Kinleck, flying an army plane from a base to be established at Concord. The plane will circle Gunstock Mountain and other territory in the vicinity of Lake Winnipesaukee, dropping gas bombs. The gases are fatal to insect pests, but not harmful to humans or to vegetation, according to those making the experiment. The flight is being made under the auspices of the Federal Department of Agriculture.

Thompson and Norris, the Brooklyn manufacturers of corrugated paper board products, have more orders than they can handle. The entire force is at work on a full time basis, and there is every sign that the plant will continue operating thus for months to come.

With the carrying out of plans just completed by the Power Plant Specialty Company of Chicago, the Kalamazoo Vegetable Parchment Company's plant at Kalamazoo will be equipped with one of the finest chemical water treating plants in America. The new installation is being made so that the water supply required in the manufacturing processes may again be obtained from the Kalamazoo River. The company has been depending largely upon a system of wells during the past few years. These will now be abandoned for the most part.

A movement to work out a national program of reforestation which aims to insure a future timber supply, conserve the soil, retard floods and prevent excessive erosion and endangering the country's power developments has been started by engineers and scientists. The movement will be carried on through the American Engineering Council of the Federated American Engineering Societies, according to an announcement just given out. Federal and State forestry services, universities, railroads, farmers' organizations and engineering bodies are cooperating and the aid of the moving picture industry and Boy Scouts will be enlisted later.

A Chicago office has been opened up for the S. D. Warren Company by G. W. Olmsted. It is located in the Old Colony Life Building, West Jackson Boulevard.

Just before his departure for Europe recently, Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, was honored by being named president of the Trade Association Executives at that organization's annual meeting in New York City. Dr. Baker has also been made a member of the department committee on Natural Resources Production of the Chamber of Commerce of the United States, of which Maj. William D. Brookings, is manager. The departmental committees of the National Chamber have a general advisory supervision over the affairs of the department, and some of the country's best-known lumber and mining men are included in this committee's membership.

Long Price List Controversy

Much importance is attached by the trade in Philadelphia to the recent conference between paper men and their chief customers the printers, engravers and other converters of paper. The meeting was occasioned by a joint dinner. As a result of informal talks and addresses, it is expected the controversy long waged over the the long price list will close. The meeting ratified a plan of co-operation which had been evolved during a series of conferences at which the printers' demands had been considered. This plan provides in substance that fine paper distributors will sell printing papers only to the converters and not to the ultimate consumer and that the printers in turn will look to the paper distributors and not to the mills for their supplies, and finally, that the long list, while it was not adopted by the paper distributors who are members of the Paper Trade Association and thus are affiliated with the National Paper Trade Association, will be carried on by the Typothetae only in an educational and not in an aggressive way. Because the long list controversy was carried on in Philadelphia as in no other city in the United States, the conference in that city last month is considered of greater significance than similar meetings could have in any other city. So large was the gathering that accommodation plans were wholly inadequate in dining the guests.

PHOTOGRAPHERS TO MEET AT CHEMICAL EXPOSITION

In the recent formation of the Technical Photographic and Microscopical Society, composed of many well-known chemical engineers, physicists, and mathematicians, the textile, paper, leather, rubber, metal and paint industries of America will undoubtedly find a solution of many of their problems.

The next regular meeting of the new technical photographic society will be held in conjunction with the Eighth National Exposition of Chemical Industries during the week of September 11-16th, at the Grand Central Palace, New York, on Thursday afternoon, September 14th. In addition to meeting, the organization has already made arrangements for the display and explanation of the work of individual members in technical micro-photography and its application to the every-day problems of the chemical or chemical consuming plant. A booth at the Exposition has been reserved for the purpose. A. E. Buchanan of the McGraw-Hill Co., New York, is chairman of the general committee on exhibits.

Among those who are expectel to be heard at the Chemical Exposition meeting of the society, are Dr. C. E. Kenneth Mees, of the Eastman Kodak Co., John H. Graff of the Brown Co., Berlin N. H., Susan B. Leiter and Dr. W. H. Whitney, of the General Electric Co., Henry Green of the New Jersey Zinc Co., and other micro-photographic authorities.

Among other associations, whose meetings will be held in conjuction with the Chemical Exposition is the Technical Association of the Pulp and Paper Industry.

PULP AND PAPER NEWS

Mr. W. Gorman, of the Montreal office of the Pro vincial Paper Mills, Limited, left on the "Metagama' for Glasgow on July 1. He will be absent for two or three months. Mr. Gorman has just recovered from an illness, and has taken the trip on his doctor's advice.

The mill of the St. Lawrence Paper Mills, Limited, Three Rivers, P. Q., will be constructed of steel and brick. It will consist of finishing room and train shed, machine room, screen room, grinder room, boiler room, and out-station and transformer house. The ceremony of blessing the first wooden pile of the mill was performed on June 27 by Monseigneur Massicotte, representing Bishop Cloutier. Fourteen hundrer Raymond concrete piles will be constructed for the foundations.

Last Thursday Mr. G. Q. Dowling died at Iroquois Falls, Ont., after a brief illness. He was connected with the Townsite office of the Abitibi Power and Paper Co. It was only on May 25th that he was married to Louise Wilson, daughter of L. R. Wilson, secretary of the Company.

Quite some excitement was aroused by a dispatch from Stockholm that the entire Scandinavian paper production would be sold in the United States through a new syndicate, headed by an official of the Canadian Export Paper Co. This ridiculous exaggeration and misrepresentation was promptly corrected — but Ru mour travels by radio these days while Truth still walks.

Many in the paper industry will be be sorry to hear that Mrs. Robert Greig, wife of the superintendent of Price Bros. and Co., died at Kemogami on June 23.

Plans are being made for a big conference to deal with plans for improving the unemployment situation and to make provision for next winter.

The Legislature of Alberta has made some changes in the law for the protection of forests. Penalties have been made heavier, and the law strengthened.

A. P. Costigane, Secretary and Engineer of the Ontario Pulp and Paper Makers' Safety Association, is on an extended trip covering the mills in the Western areas of the Province.

Messrs. Frank L. and Norman Ratcliffe of the Ratcliffe Paper Company who have been on the vacation list have returned and are expected to have some things of interest as to fishing and golf stored away, in addition to mosquito bites and a coat of tan.

TO ENLARGE KIMBERLY-CLARK PLANT IN NIAGARA FALLS

Contracts have been let by the Kimberly-Clark Company to erect additions to its plant in Niagara Falls, N. Y., to include a new pulp house, grinder room, finishing room and screen room. The cost is estimated at $60,000. Brass Brothers, contractors, have started work laying the foundation for another papermaking machine for the Kimberly Clark Company, which will double the capacity of the concern. No estimate has yet been made of the big increase in the number of employees when the new additions are in operation. All four new buildings will be one story high of reinforced steel and concrete. Two of the buildings will be 50 by 100 feet and the others 50 by 120 feet. The total cost of buildings and machinery will be over $100,000. It is expected to have the output of the company doubled before the end of the present year.

CANADIAN DEMONSTRATION IN NEW YORK

The almost unlimited resources in water power and forest products of Canada with its pulp and paper mills, and wood distillation plants already in operation, will be the subject of the exhibit by the Canadian Department of the Interior at the Eighth National Exposition of Chemical Industries which will be held in the Grand Central Palace, New York, during the week of September 11-16th. The Forest Products Laboratories of Canada in co-operation with McGill University, will demonstrate the possibilities of Canada's undeveloped water power and forests for American capital, and display at the Exposition the variety of chemical products made from the natural resources of the Dominion by various electrical processes. A representative of the Forestry Branch of the Department of the Interior will be present at the Exposition to explain by the use of maps and samples, the distribution of raw materials for further development.

TURNED DOWN BY SENATE

The Lake of the Woods Control Bill which passed the Ontario House and Commons has been turned down by the Senate on the ground, practically, that the united control by Ontario and the Dominion might conflict with the rights of Manitoba. This action throws the whole question of provincial control of provincial waters back into the arena and no doubt there will be some very interesting developments as Premier Drury of Ontario is a keen advocate of Provincial control.

FOREST CLOSURE SUCCEEDS

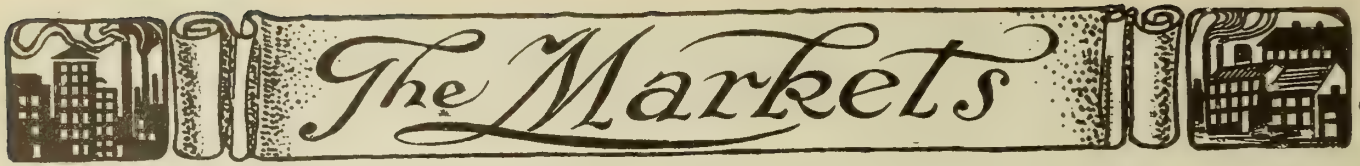
Quebec, June 28.—Great satisfaction was expressed this morning by Hon. Honore Mercier, Minister of Lands and Forests, that the enforcement of the forest permit regulations is not creating difficulties and that people are co-operating with authorities.

"I believe the public agreed that radical means should be taken to prevent further devastation. According to advance reports," said the Minister, "the territory devastated by fire this year reached about 450,000 square miles, as compared with 1,200,000 square miles last year".

Mr. Mercier said that in some regions there had been reports of heavier losses this year than last.

From officials of the Lands and Forest Department it was learned that though the price of wood was not going up the demand was steadily increasing and the expectations were for a quick recovery especially in pulpwood, which is being asked from everywhere. The forest closure Order-in-Council has pleased many forest conversation experts and generally the new system has been well received.

A match head does not think and when it is irritated it becomes excited and bursts into flame.



CANADIAN TRADE CONDITIONS

Montreal, July 4. — The pulp and paper trades are characterised by slightly more activity. This will no doubt be more pronounced as general conditions improve, as they are bound to do unless all the prophets have missed their guess. The general opinion in the industry is that we shall see a slow expansion with occasional set backs, but that the trend will be upwards during the balance of the year. It is not expected that there will be any material alterations in prices. The markets are in a good position, with most of the mills supplied with substantial orders. Competition is still very keen, especially for export business.

In newsprint the mills are running at capacity, being stocked with contracts which will keep them busy until the end of the year. More orders could be obtained of the paper could be turned out. The strong position of this section is in part due to labor troubles in the United States, but the main factor is the increased demand owing to enlarged circulations of the daily press. From the end of 1919 there has been a steady rise in circulation, combined with larger editions. That rise in circulation continues, and the prospect is that is will go on for sometime.

Book and fine papers continue to be in good request. Wrappings have picked up, while the business in boards shows signs of revival. The building boom has resulted in brisk buying of roofing papers. Roofing felts are quoted at $65 to $70 per ton f.o.b. mill according to weight and quality.

The pulp department is more active. The orders have been come in freely, although so far there is no strengthening of prices. Groundwood, which failed to move in line with chemical pulps, is now selling more freely, but the rates obtained are not satisfactory. Europe is now buying pulp much more freely from Norway and Sweden, thus eliminating tonnage which would probably have been placed on the American market.

An Unfortunate Rumor

A cable from Stockholm stating that an official of the Canadian Export Paper Company had succeeded in securing the entire Swedish, Finnish, and Norwegian output of newsprint for the American market caused some surprise. The output, it was stated, was to be handled by an American syndicate. The cable message contained one of those half-truths which are so misleading. Some three or four months ago we announced that Mr. G. F. Steele, the former manager of the Canadian Export Paper Company, had left Montreal for the Scandinavian countries. Mr. Steele has returned, and is now in the United States. While abroad he secured, it is understood, the agency for one or more Scandinavian mills—hence the exaggerated cable report. To begin with, it is next to impossible for the Scandinavian countries to sell the entire output in the States. This would involve the abandonment of their customers in Europe and Asia, which take 80 per cent. of the production. Scandinavia and Germany supply the United States with 5 per cent. of the total consumption of our neighbors across the border as compared with 40 per cent. supplied by Canadian mills, so it will be seen that Scandinavia is not, normally, a vital element in the situation.

Toronto Topics

Trade is to some extent entering the Summer doldrums, though in some lines a fair activity continues. Quantities of individual sales remain small, however. Country business is fairly active but in small quantities and not far ahead of actual needs.

If it were not for the lessons learned in 1919-1920 hope might be entertained for a booming Fall business; at present it is considered that this will not take place, as any tendency to high production without the aroused will-to-purchase on the part of the consumer and supplemented by more ability to buy would lead to slumpy conditions that would defer real prosperity. No one, for example, believes in any largely increased volume of foreign trade, which was the expectation in 1919.

On the other hand there seems to be a healthy steadiness reflected in the fact that while there is a falling away in stock market activity there is no slump in prices.

With a possible railroad strike added to the coal strike, a bumper crop might be in bad shape for transportation. Any sudden ending, however, of the coal strike will be likely to cause a sharp demand for cars. There is some uncertainty as to the reaction of these circumstances on what is at present a fairly good outlook.

Market Notes

Pulp prices continue steady with a firm tone.

Groundwood delivered $30, to $40.

Sulphite delivered, News, around $60; Book grades $65 inclining upward.

Sulphate delivered $70.00.

Book and Writing show fair activity.

Wrapping and Tissue prices remain unchanged as follows:

No. 1 Kraft M. F. $8.00; M. G. $8.15; Colored Sulphite $8.00; Colored Kraft 9¾c. to 10¾c.; B. Manilla $5.50; No. 1 Manilla $6.75; Fibre Manilla $6.75.

Bags—Light Manilla 62 p.c.—7½ p.c. off 100 M lots; Heavy Manilla 60 p.c. off; Light Kraft 60 p.c. off; Heavy Kraft 50 p.c.—10 p.c.; White Confect. 17½ p.c. —10 p.c.

Tissues—No. 1 Manilla 20 x 30 80c; 24 x 36 $1.05; Natural White 20 x 30 90c.; 24 x 36 $1.25; No. 1 White, 20 x 30 $1.15; 24 x 36 $1.55; Natural or No. 1, 20 x 30 $1.00; 24 x 36 $1.40; Manilla Sulphite.

Towels—Car lots.

Interfolding per case, $5.63 net.

Bleached White, rolls of 150 towels, 50 rolls to case, $22.00, less 22 p.c.

Natural, rolls of 150 towels, $19.00, less 22 p.c.

No. 3 towels, rolls of 150 towels, $13.75, less 22 p.c.

Toilets—Car lots. List Price, less 20 p.c. and 25 p.c.

Paper Stock—Market for paper stock is inclined to be weak with the exception of cotton rags and roofing stocks.

No. 1 Hard White Shavings, $3.75.
No. 1 Soft White Shavings, $3.40.
Heavy Books and Magazines, $1.70.
Ledgers and Writings, $1.95.
No. 1 Kraft, $2.00 to $2.25.
Newspapers, 70c. to 80c.
No. 1 Mixed Papers, 60c.
No. 1 Miscellaneous Mixed 55c.
Cotton Rags No. 1 White, Nominal.
Thirds and Blues (repacked) $1.90 to $2.00.

New Cotton Cuttings, 4 to 5.
Fancy Shirt Cuttings, 4 to 5.
No. 1 White Shirt Cuttings, 9½ to 10½.
Canton Flannels Bleached, 8 to 8½.
White Lawns, 7 to 7½.
Blue Overall Cuttings, 5 to 5½.
Ropes and Bagging — No. 1 Scrap Bagging $17.50.
No. 1 Manilla Rope 5¼ to 5½.
Mixed Strings, $16.00 to $17.00.

NEW YORK MARKETS

New York, July 1 — (Special Correspondence) — Trade activity in paper continues of fairly broad scope, and while it is true that demand for some kinds of paper has slowed down to an extent, which is the usual thing at this time of the year and which therefore has caused no surprise whatsoever in the trade, the situation is still characterized by much life with the market displaying a healthy and promising condition. Mills are commencing to prepare for their mid-summer closing down period to make repairs and compile inventories, and this necessarily has a quieting influence on the situation generally, both as regards raw material of which paper is made as well as the finished product. Consuming industries also are toning down in activity as the summer wears on which obviously leads to a smaller demand for paper, and while most members of the paper trade look for business to hold up unusually well during the next several months, it is also expected that the market will not be attended by quite the activity that has prevailed recently.

It is generally conceded that the Post Office Department is a fair barometer of business conditions. It is highly interesting therefore to note that the postal receipts for the month of May for the United States's fifty largest cities amounted to over $23,000,000, which exceeds the record for May, 1921, by over $3,000,000, and which is three times the revenue for May, 1909. This is a very apt illustration of the improvement in business during the past several months, and is of particular importance to the paper manufacturer and merchant because it shows to what extent the consumption of paper, especially fine papers such as bonds, linens and ledgers which are used for stationery, envelopes, billheads, folders, circulars, etc., is increasing.

The Federal Trade Commission's report on the newsprint industry for May contains figures which show a further expansion of manufacturing activity during that month. A total of 129,950 net tons of print paper was produced by U. S. mills in May, compared with 111,861 tons in April of this year; 78,868 tons in May a year ago, and an average monthly output based on reports covering the past five years of 114,440 tons. These figures indicate that newsprint production in May bordered close onto the maximum tonnage reached by mills during the boom period following the war, and another especially encouraging point in the report is that in spite of the big increase in output during May mill stocks decreased, even though slightly, during that month. At the beginning of May mills held 24,874 net tons of print paper, and at the end of the month had in stock 24,781 tons, thus showing that they shipped out all of their tonnage produced in that month.

The market for newsprint continues firm of tone and the movement of supplies from mills into consuming channels is unabated. Book papers are favored with a little more demand day by day though prices are still in an irregular and unsatisfactory position, with much of the book paper now being marketed sold at cost or below cost

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Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

of manufacture. Coarse papers are in a mild slump, due to the season, and prices are marked by easiness in most quarters. Continued heavy imports of kraft wrapping paper from Europe also have a depressing influence on the domestic situation. Tissues are fairly active as regards towels, napkins and toilet tissues, whereas fine tissue papers are quiet—the usual state of affairs in the summer, there being little call for fine tissue at this period of the year. Box boards are active and are apparently growing more so day by day. Paper box manufacturers are buying freely against early fall requirements, and quotations on board display a stiffening trend. Mills are getting more orders than in a long time and are wisely marking up prices to levels where they can realize a profit in manufacturing. Plain chip board is quoted at from $37.50 a ton f.o.b. New York upward, and news board of filled quality at from $40 upward.

GROUND WOOD — Little or no change is reported in the ground wood situation. Reports from producing centres tell of a fairly large output of pulp notwithstanding the difficulties some grinding mills have had to contend with through swollen mill streams due to the heavy rains in various parts of the country, yet demand holds up fairly well and there is no easiness in prices. In fact, ground wood quotations evince a rather firm tone. Producers are not pressing their pulp onto the market, and there is ample buying to absorb the great bulk of pulp offered so that it is not necessary except in exceptional cases for manufacturers to cut prices to effect sales.

CHEMICAL PULP. — The movement of chemical wood pulp into consuming channels is of moderate tonnage. Paper mills are reported placing orders with greater regularity and for larger amounts of pulp than in some time, and most members of the trade express satisfaction with the present market condition. There are those who are given to complain of some phase of the situation, and it is noticeable that these are generally those who have to do with the selling of domestic pulp, which bears out the contention in many quarters that foreign pulp is finding a readier market in the United States at present than domestic pulps, due, of course, to a matter of price. Instances have been cited where consumers of sulphite who operate their own pulp mills have closed down their pulp plants and are running their paper mills on imported sulphite. How true this is, is a question, and if true the probabilities are this is happening only in the rarest of cases because there does not seem to be enough difference in prevailing prices on foreign and domestic pulps to warrant such action. No change is reported in quotations. It would appear as if prices on foreign pulps are tending to stiffen, whereas those on domestic grades remain easy. The most encouraging feature of the market is the manner in which consumers are ordering pulp. There is a consistently good demand, which seems to be broadening despite the season of the year. It is stated, on good authority, that Finnish kraft is bringing $2.65.

RAGS. — All kinds of raw material for the paper mill have been a little quieter during the past several days, evidently due to the approaching holiday period. There has been no weakening of values, however; instead rag prices show just as strong a tone as previously, and sales have been recorded during the week establishing prices on new high levels. Roofing stock is particularly firm, and is in active demand. Felt paper millls have paid 1.20 cents a pound f.o.b. New York for No. 1 roofing rags, and 1.05 to 1.10 cents for No. 2 packing, and there is a growing call for supplies at these figures. New No. 1 white shirt cuttings have sold at close to 11 cents a pound f.o.b. this city, and other kinds of new cuttings have moved up in price, unbleached muslins to 9.75 cents, blue overall cuttings to 5.50 cents, washables to 4 cents, and black silesias to 5 cents. Old whites are firm at around a basic level of between 6.25 and 6.50c. for repacked No. 1 whites of average quality, with specially graded rags of this classification bringing 7 cents and more from paper mills.

PAPER STOCK. — Demand for old paper is somewhat quieter, a good many mills having retired as buyers within the last several days, but prices are well maintained and it appears doubtful that consumers can get supplies at any cheaper figures. No. 1 hard white shavings are quoted at 3.75 to 4 cents a pound at dealers' shipping points, No. 1 soft white shavings at 3.65 to 3.85 cents, heavy No. 1 books and magazines at around 1.85 cents, mixed books at 1.50 cents, old No. 1 kraft at 1.85 cents, ledgers at 1.90 cents, folded newspapers at 70 cents a hundred pounds, and No. 1 mixed papers at 57½ cents. Packers and dealers are expecting the market to open up firmly following the holidays and are not pushing sales just at present.

OLD ROPE AND BAGGING. — Six cents per pound still appears to be the market price of old No. 1 manila rope although sales to paper mills have been reported at higher levels. Available stocks of old rope appear to be light, and it is stated that dealers in Europe, where a large part of the supply consumed by American paper mills comes from, are quoting stiff prices, importers asserting that they can scarcely bring rope in from the other side at a cost of less than 6 cents a pound to themselves. Demand from mills is good, and rope is moving freely whenever offered within reasonable price bounds. Old bagging is quiet with the exception of a fair demand from roofing mills, which are paying about 80 to 85 cents a hundred pounds f.o.b. New York for bagging suitable for their purposes.

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CHEMICAL — MECHANICAL
WOOD PULP
FOREIGN — DOMESTIC

(Continued from page 567)

structed which are lined to any desired thickness with "ceratherm" in such a manner that it cannot be detached from the side by the severest mechanical or chemical strain, and can be kept perfectly clean. The lining is also suitable for "paper digesters" (pulp digesters are probably meant-Abs.) and it is claimed that this lining is at least a thousand times as resistant as any lining which has hitherto been provided to the chemicals contained therein, and need only be one-sixth as thick as the old-fashioned lining. -A. P. -C.

M-12 Recording Instruments in the Pulp and Paper Industry. L. G. BEAN, Bristol Co., Waterbury, Conn. **Pulp and Paper,** International Number 11, 122h-122i, (Dec. 1921); **Paper Trade J.,** lxxiv, No. 2, 50-51, (Jan. 12, 1922). A partial enumeration of the uses to which recording instruments can be put in the pulp and paper industry. -A. P. -C.

N — Power Generation and Equipment

N-6 Powdered Coal as Fuel in Steam Plants. HENRY KREISINGER and JOHN BLIZARD, U. S. Bureau of Mines. **Pulp and Paper,** xx, 79-82, (Feb. 2, 1922); **Paper Ind.,** iii, 1633-1637, (March 1922). A higher thermal efficiency can be attained in steam plants by burning coal in the powdered form than by burning it by any other method, provided the furnace and burner have been properly designed. The article describes various furnace designs and briefly discusses the ease of following variations in load and the power and coal required to prepare the pulverized coal. -A. P. -C.

N-6 Electric Steam Boiler. Fr. Patent No. 530, 005, SOCIETE SULZER FRERES, Dec. 12, 1921. **Technique Moderne,** xiv, 142, (March 1922). The current is passed through the water, which thus constitutes the resistor. The steam production is approximately proportional to the surface of the electrodes immersed in the water, which is regulated by means of a float, either in the steam generator proper or in a separate chamber communicating with the former, the water level being raised or lowered by lowering or raising the float. -A. P. -C.

N-0 The Use of Fuel Oil. T. R. REMSEN, St. Maurice Lumber Co. **Pulp and Paper,** xx, 50-53, (Jan. 19, 1922); **Paper Ind.,** iii, 1524-1528, (Feb. 1922; **Paper Trade J.,** lxxiv, No. 10, 47-50, (March 9, 1922). A general description of the method of handling fuel oil, of the equipment used for burning it, and of the advantages and disadvantages of this fuel. A. P. -C.

P.— Safety and Welfare

P-2 Educational Work in the Pulp and Paper Industry. .Paper, xxix No. 13, p2-24, (Nov. 30, 1921); **Pulp and Paper,** xx, 31-32, (Jan. 12, 1922); **Paper Ind.,** iii, 1421-1422, (Jan. 1922). A general outline of the scope of the text books being prepared by a joint committee of the American and Canadian pulp and paper industry, and of the use to which they can be put for the instruction of mill men. -A. P. -C.

Q.— Planning and Construction

Q-2 Engineering as Related to the Pulp and Paper Industry. H. S. TAYLOR. **Pulp and Paper,** xix, 1161-1163, (Nov. 17, 1921); **Paper,** xxix, No. 15, 9-11, (Dec. 14, 1921); **Paper Trade J.,** lxxiii, No. 26, 54, 56, (Dec. 29, 1921). A description of the fundamentals of paper mill engineering, especially from the point of view of the designing and construction of pulp and paper mills. -A. P. -C.

Q-3 What it Costs to Build a Paper Mill. GUY TOMBS. **Pulp and Paper,** xx, 98-101, (Feb. 9, 1922). A popular description of the work and expense involved in financing and building a paper mill. -A. P. -C.

Q-0 The Pulp and Paper Mill Engineer as an Organization. J. A. HEDGCOCK, H. S. Taylor Ltd., Montreal. **Pulp and Paper,** xix, 1299-1301, (Dec. 29, 1921); **Paper Trade J.,** lxxiv, No. 1, 51-52, 54, (Jan. 5, 1922); **Paper Mill** xlv, No. 5, 14, 16, 38, 40, (Feb. 4, 1922). Discussion of the evolution of the paper mill engineeer from an individual to an organization as the demands upon him increased with the development of the industry; together with an outline of the work which the paper mill engineer should do in connection with new jobs and with extensions and improvements. -A. P. -C.

R.— General

R-2 The Technical Paper and Its New Relation to Industry. H. C. PARMELEE. **J. Ind. Eng. Chem.,** xiv, 153-156, (Feb. 1, 1922); **Chem. Met. Eng.,** xxvi, 197-200, (Feb. 1, 1922). In order to better fulfill its function of service and leadership, the modern technical paper has extended its scope of usefulness and supplement its technology with the economics and business of the industry it serves. -A. P. -C.

R-4 The Engineer and the Operator as Associates. W. J. ZIMMERMAN, H. S. Taylor Ltd., Montreal. **Pulp and Paper,** xx, 115-116, (Feb. 16, 1922); **Paper Mill,** xlv, No. 7, 10, 12, (Feb. 18, 1922); **Paper,** xxix, No. 25, 7-9, (Feb. 22, 1922). A brief discussion of the function of the engineer and of the operator in the construction of a new or improvement of or addition to an old mill, with special emphasis on the need for co-operation between the two. -A. P. -C.

R-5 Situation of the British Paper Industry. Paper, xxix, No. 19, 16, (Jan. 11, 1922). A brief analysis of the present situation of the paper industry in Great Britain, showing the grave menace to this industry of the revival of activity of the German industry. -A. P. -C.

R-5 Wrapping Paper and Business Conditions. GEO. W. SISSON, JR., Racquette River Paper Co.,**Paper,** xxix, No. 10, 9-16, (Nov. 9, 1921); **Paper Trade J.,** lxxiii, No. 19, 21-25, (Nov. 10, 1921). An analysis of the position of the coarse paper industry and of its bearing on general business. -A. P. -C.

R-5 Conditions in the Fine Paper Industry. NORMAN A. WILSON, Hammermill Paper Co., Erie, Pa. **Paper,** xxix, No. 10, 16-20, (Nov. 9. 1921); **Paper Trade J.,** lxxiii, No. 19, 29-31, (Nov. 10, 1921); **Paper Ind.,** iii, 1101-1104, (Nov. 1921). An analysis of the condition of the fine paper industry forecasting the future from the data of past experience. -A. P. -C.

R-5 Business Conditions in the Bag Industry. J. H. STANNARD, Grand Lake Paper Co., New York. **Paper,** xxix, No. 10. 21-22, (Nov. 9, 1921); **Paper Trade J.,** lxxiii, No. 19, 32, (Nov. 10, 1921). An analysis of the present status of the bag industry, showing that a revival of buying indicates a wave of prosperity during the coming year. -A. P. -C.

R-5 The Pulp and Paper Industry of Newfoundland. Paper, xxviii, 17, (May 25, 1921). Brief sketch of the status of the pulp and paper and lumber industries in Newfoundland. -A. P. -C.

R-12 The Superintendent and the Cost Department. E. T. A. COUGHLIN, Monarch Paper Co. **Paper,** xxix, No. 11, 22, 23, (Nov. 16, 1921) ; **Paper Trade J.,** lxxix No. 20, 28, 30, (Nov. 17, 1921) ; **Pulp and Paper,** xix. 1231-1233, (Dec. 8, 1921). A proper cost system should serve as a means not only of arriving at a proper selling price, but also to direct, inform, control, and guide the superintendent in all the details of the mill management. The attaining of this object requires co-operation between all concerned so that the superintendent having confidence in his cost men will act on the strength of their figures. -A. P. -C.

DEMAND AGAIN TURNS TOWARDS CANADIAN PAPER

Reference is made in the monthly letter of the Royal Bank of Canada to the pulp and paper industry of Canada. After discussing the conditions leading up to the recent depression in the industry and the period of deflation which has been passed through, the letter makes the following comment:—

In the first half of the present year certain factors have caused foreign demand to swing back again to the Canadian manufacturer. It would appear that some European firms who had offered paper at lower prices than those quoted by the Canadian exporters have found themselves unable to fill their orders promptly, and, in extreme cases, unable to fill them at all, owing to a depleted supply in certain European countries, especially in Germany. Some of the paper that was shipped at reduced prices was said to have been of an extremely low grade. One publisher received a large order of newsprint, which he was unable to use. This state of affairs was, in general, unsatisfactory; it goes without saying that the nature of the newspaper industry demands a steady, uniform, and sure supply of paper. Such a supply, the Canadian manufacturer offers, and he is finding increasing favor with the foreign purchaser. Furthermore, in the United States, an increasingly optimistic attitude towards the future, and an actual slight improvement in present business conditions, have resulted in more advertising and an increased consumption of newsprint.

What has been said in the preceding paragraphs refers more particularly to buyers of paper, and to some extent to buyers of pulp, in U. S. A., but a similar situation exists also abroad. The Australian buyer is becoming more interested in Canadian pulp, and one Canadian firm recently has received orders of very considerable importance from that source. In the Argentine and Brazil, too, there are signs of a tendency to turn away from the European market, in favor of Canadian paper. That our pulp products are gaining favor in the United Kingdom is certain. In spite of the fact that the total British imports of pulp in 1921 were very much smaller than those of 1920, the amount imported from Canada in 1921 was considerably greater than that of the previous year.

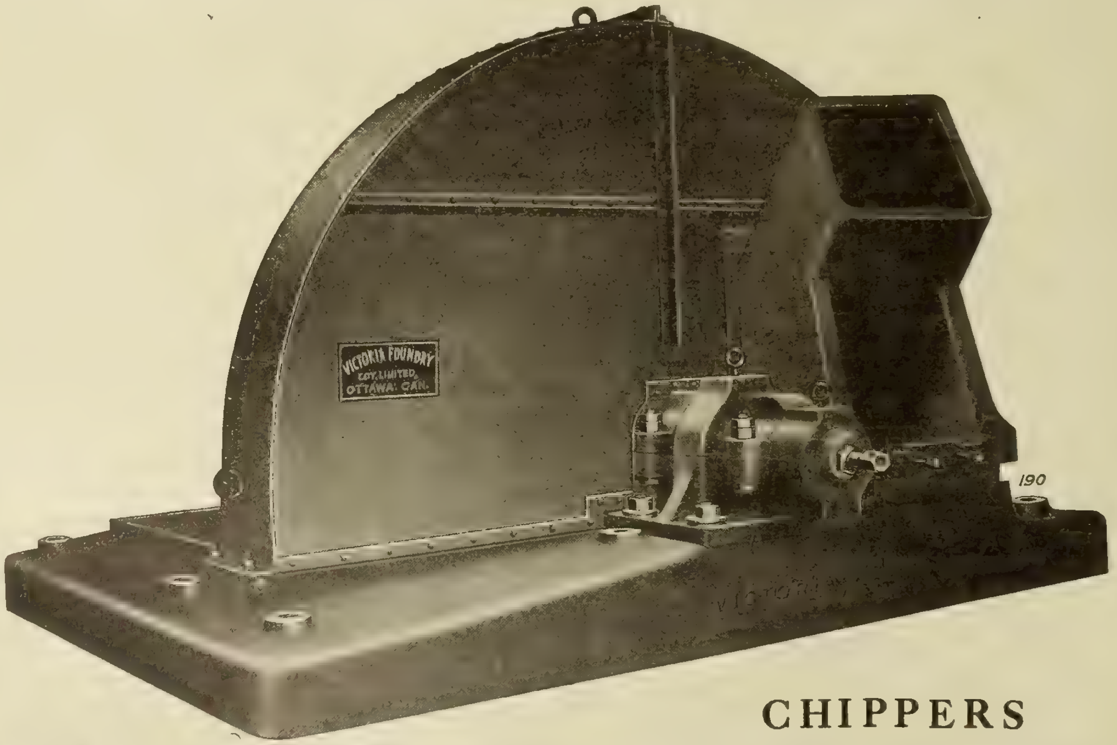
FOREST FIRES IN B.C.

VICTORIA, B.C., June 29.— With twelve new fires reported on the lower mainland alone, the forest fire situation in British Columbia grows serious, says a report issued by the forestry department last night. Five weeks of drought have made the forests as dry as tinder and fire fighters are faced with an almost hopeless task. Much valuable timber is being destroyed. Of 747 fires to date, 231 were reported during the last week.

J. ERICHSEN SUCCEEDS O. M. PORTER

Jacob Erichsen has been made secretary of the Cardboard, Glazed and Fancy, and Gummed Paper Manufacturers' Associations, succeeding O. M. Porter, who has become secretary of the Pulp Manufacturers' Association, in addition to his other duties as assistant secretary of the American Paper and Pulp Association and of the Woodlands Section of that association.

Applications of the Eastern Maine Railroad and the Mattawamkeag and Eastern Railroad companies to build a 128 mile railroad from Houlton to Bangor, Maine, with a branch line in Orient township, were denied by the Interstate Commerce Commission.



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CARELESSNESS with matches, cigarette butts, cigar ends, pipe ashes, camp fires, fly smudges, railway locomotives, slash-burning operations—human carelessness of some kind accounts for 97 per cent. of the forest fires which every year add further devastation to the northern areas of this province.

Here are typical cases picked at random from last year's Fire Rangers' reports:

The rangers on the Ombabika to Fort Hope canoe route in the far north on July 4th found an area 10 miles long by 4 miles wide which had been swept by fire since their previous trip. A camp fire left on a portage was the cause.

A prospector on the Montreal River started a fire on July 7th which burned over 4,800 acres in Baden Township, destroying 1,000,000 feet of pine and 9,000 cords of pulpwood, and which required attention for a month.

A party of fishermen camped on Porcupine Lake, Burton Township, Parry Sound, were responsible for a fire on July 10th, which burned over 25,000 acres and 2,000,000 feet of timber.

The best ways to fight forest fires is to prevent them.

Ontario Forestry Branch

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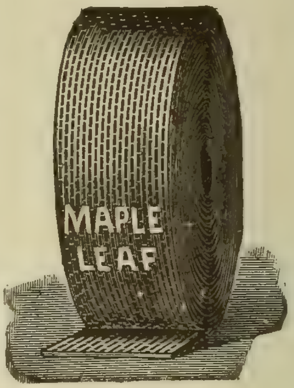

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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Dept., Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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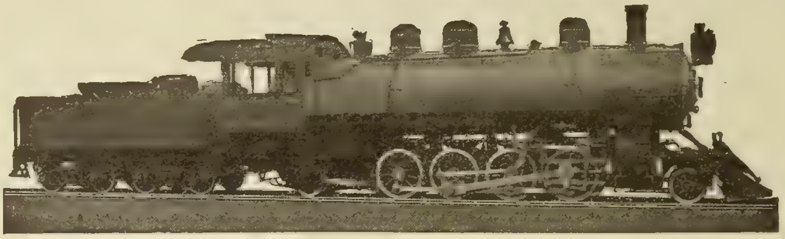

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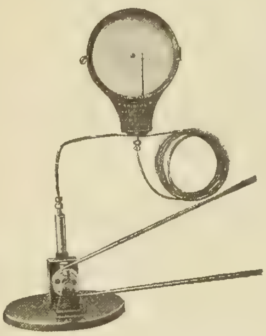
American Woodpulp Corp.
Donnacona Paper Co.
M. Gottesman & Co., Inc.
Lagerloef Trading Co., Inc.
Laurentide Co., Ltd.
Mattagami Pulp & Paper Co., Ltd.
Price Bros. & Co., Ltd.
Riordon Sales Co., Ltd.
Spanish River Pulp & Paper Mills. Ltd.
St Maurice Paper Co.
Smith Howard Paper Mills.

Tissue and Toilet:
Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
E. B. Eddy Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Wrapping:
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
E. B. Eddy Co., Ltd.,
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Spanish River Pulp & Paper Mills.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd



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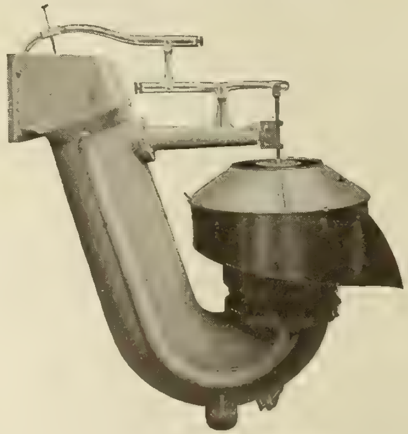

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Pulp & Paper Trading Co.

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The Barrett Co., Ltd.
Beveridge Supply Co., Ltd.

Paper Bags:
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E. B. Eddy Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Packing:
Can. Johns-Manville Co., Ltd.

Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
Walmsley, Charles & Co., Ltd.

Paper Genuine Vegetable Parchment:
Beveridge Supply Co., Ltd.

Paper and Pulp Machinery:
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Bertrams, Ltd.
Black-Clawson Co.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd
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Emerson Mfg. Co.
Hamilton Co., Ltd., Wm.
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Norwood Engineering Co.
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McAvity & Sons, Ltd., T.
Mills Works & Machinery, Ltd.
Morrison, J. L. Co.
Port Arthur Shipbuilding Co., Ltd.
Perkins, B. F. & Son, Inc.
Pulp & Paper Mill Accessories, Ltd
Reid, Cl de Wolf.
Pusey & Jones Co.
Sherbrooke Machinery Co., Ltd.
Smith, Morgan Co.
Stebbins Eng. & Mfg. Co.
St. Maurice Paper Co.,
Ticonderoga Machine Works.
Walsh Plate & Structural Works, Ltd.
Walmsley, Chas. & Co.,
Waterous Engine Works, Co., Ltd.
Westbye, P. P.
Wolf, R. B. Co.

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Perkins, B. F. & Sons, Inc.
Waterous Engine Works, Co., Ltd.

Penstocks:
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Horton Steel Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:
Pacific Coast Pipe Co., Ltd.
White, W. H.

Pillow Blocks:
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Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works, Co., Ltd.

Pipes:
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Piping—High Pressure:
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Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Piping Hydraulic:
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Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

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Can. Chicago Bridge & Iron Co., Ltd.
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Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works Co., Ltd.

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Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:
Sturtevant, B. F. Co., of Canada, Ltd

Pneumatic Thickeners:
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Waterous Engine Works, Co., Ltd.

Pneumatic Tools:
Canadian Ingersoll-Rand Co., Ltd.

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Canadian Ingersoll-Rand Co., Ltd.
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Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd

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Hydraulic Machinery Co., Ltd
Port Arthur Shipbuilding Co., Ltd
Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Dominion Engineering Works, Ltd.
Diamond State Fibre Co. of Can., Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Victoria Foundry, Ltd.
Waterous Engine Works, Co., Ltd.

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Pulp Stones:
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Beveridge Supply Co., Ltd.
International Pulp Stone Co.
Imperial Trading Co.
Lombard & Co.
Miramichi Quarry Co., Ltd.
Smallwood Stone Co.
Smallwood-Low Stone Co.

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Pulp & Paper Mill Accessories, Ltd
Port Arthur Shipbuilding Co., Ltd.

Pulp Wood:
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Dominion Engineering Works, Ltd.
Downingtown Mfg. Co.
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Goold, Shapley & Muir Co., Ltd.
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Harland Engineering Co., Ltd.
Lawrence Machine Co.
McAvity, T. & Son.
Northern Foundry & Machine Co.
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Peacock Bros., Ltd.
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Sherbrooke Machinery Co., Ltd.
Victoria Foundry, Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Weir, Ltd., G. & J.

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McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co., Ltd

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Rag Cutter Knives:
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Pulp & Paper Mill Accessories, Ltd

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Gartshore, J. J.

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Recording Wattmeters:
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Port Arthur Shipbuilding Co., Ltd.
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Waterous Engine Works, Co., Ltd.

Regulators—Steam.
Beveridge Supply Co., Ltd.
Pickles, W. F.

Regulators:
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Rods—Copper, Brass and Bronze:
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Tallman Brass & Metal, Ltd.

Rods—Welding:
Tallman Brass & Metal, Ltd.

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Beveridge Supply Co., Ltd.
Can. Johns-Manville Co., Ltd
Reed & Co., Ltd., Geo. W.

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Goldie & McCulloch Co., Ltd.

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Wilson Paterson Co.

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Goldie & McCulloch Co., Ltd.

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Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Cameron Machine Co.

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Union Screen Plate Co. of Canda.
Waterous Engine Works, Co., Ltd.

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Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Carthage Machine Co.
Hamilton, William Co., Ltd.
Hydraulic Machinery Co., Ltd.
Perkins & Son, Inc., B. F.
Pulp & Paper Mill Accessories, Ltd.
Sherbrooke Machinery Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd
Westbye, P. P

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Goldie & McCulloch Co., Ltd.
The Mason Reg. & Eng. Co

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Beveridge Supply Co., Ltd.
Foxboro Co., Inc.
Peacock Bros., Ltd.
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Victoria Foundry Co., Ltd.
Waterous Engine Works, Co., Ltd.

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Tallman Brass & Metal, Ltd.

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Victoria Foundry, Ltd.

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Hydraulic Machinery Co., Ltd.

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Waterous Engine Works, Co., Ltd.

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Cameron Machine Co.
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Morrison, The J. L. Co.
Ticonderoga Machine Works.
Walmsley, Charles & Co., Ltd.

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Alberene Stone Co.

Smelter Lining:
Alberene Stone Co.

Beveridge Supply Co., Ltd.

Smoke Stacks:
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Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
McKinnon Steel Co.,, Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works Co., Ltd.

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Soot Cleaners:
Beveridge Supply Co., Ltd.

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McAvity T. & Son.
Tallman Brass & Metal, Ltd.

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Waterous Engine Works, Co., Ltd.

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Carthage Machine Works.
Hamilton, William Co., Ltd.

Split Pulleys—Wood and Steel:
Canadian Fairbanks-Morse Co., Ltd.
Waterous Engine Works Co., Ltd

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White, W. H.
Walsh Plate & Structural Works, Ltd.

Sprockets
Canadian Fairbanks-Morse Co., Ltd.
Canadian Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co., Ltd
Waterous Engine Works Co., Ltd.

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Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd.

Steam Appliances:
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McAvity, T. & Son.
Pulp & Paper Mill Accessories, Ltd
Waterous Engine Works Co., Ltd.

Steam Engines:
Sturtevant Co. of Canada, Ltd., B. F.
Walmsley, Charles & Co., Ltd.

Steam Regulator:
Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
McAvity, T. and Son.
Pickles, W. F.

Steam Specialties:
Canadian Fairbanks-Morse Co., Ltd
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd
Waterous Engine Works Co., Ltd.

Steel Barrels:
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Smart-Turner Machine Co., Ltd.

Steam Turbines:
Fraser & Chalmers, Canada, Ltd.
Goldie & McCulloch Co., Ltd.
Sturtevant, B. F. Co., of Canada, Ltd

Stokers—Mechanical:
Babcock & Wilcox, Ltd.

Stones—Pulp:
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Beveridge Supply Co., Ltd.
International Pulp Stone Co.
Lombard & Co.
Miramichi Quarry Co.
Smallwood Stone Co.
Smallwood-Low Stone Co.

Stoneware—Chemical, Acid-Proof:
Alberene Stone Co.

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Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
Northern Foundry & Machine Co., Ltd.
Victoria Foundry, Ltd.

Strainers—Water:
Babcock & Wilcox, Ltd.
Canadian Link-Belt Co., Ltd.

Straw Cutters:
Bertrams, Ltd.

Structural Steel Works:
Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.

Stuff Chests:
Can. Des Moines Steel Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works Co., Ltd.

Suction Rolls:
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Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Sulphite Mill Equipment:
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Carthage Machine Co.
Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
McAvity, T. and Son.
Port Arthur Shipbuilding Co., Ltd.
Stebbins Eng. & Mfg. Co.
Texas Gulf Sulphur Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works Co., Ltd.

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H. D. Pochin & Co., Ltd.
Imperial Trading Co.
The Kalbfleisch Corporation.
Wilson-Paterson Co.
Alberene Stone Co.

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Hamilton, William Co., Ltd.
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Port Arthur Shipbuilding Co., Ltd.
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Sulphur Burners:
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McKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd
Stebbins Engineering & Mfg. Co.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works Co., Ltd.

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Canadian Fairbanks-Morse Co., Ltd
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Canadian General Electric Co., Ltd
Harland Eng. Co., Ltd.
Northern Electric Co., Ltd.

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Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd
Canadian Pipe Co., Ltd.
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Goldie & McCulloch Co., Ltd.
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McKinnon Steel Co., Ltd.
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Port Arthur Shipbuilding Co., Ltd.
Reed Co., Ltd., Geo. W.
Toronto Iron Works, Ltd.
Victoria Foundry
Walsh Plate & Structural Works, Ltd.

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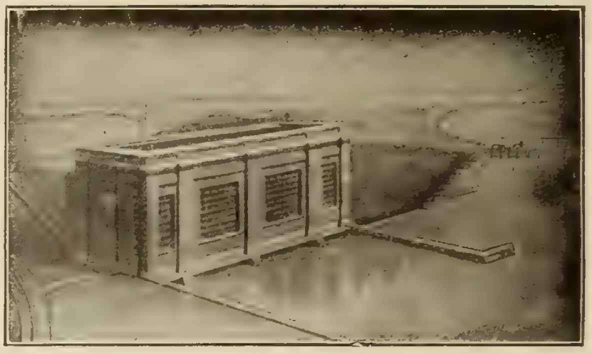
Coating Mill, Barber Division, Georgetown, Ont.



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St. Lawrence Division, Mille Roches, Ont.

Montrose Division, Thorold Ont.

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Waterous Engine Works Co., Ltd.

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Ontario Wind Engine & Pump Co
Pacific Coast Pipe Co.
White, W. H.

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Telephone—Apparatus:
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Temperature Inst
The Bristol Co.

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Horton Steel Works, Ltd.

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Lacey, James D. & Co.

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Kingsbury Machine Works.

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Horton Steel Works, Ltd.
Walsh Plate & Structural Works, Ltd.

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Northern Electric Co., Ltd.

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Hamilton Co., Ltd., Wm.
Jones & Glassco.
Renold of Canada, Ltd., Hans
Waterous Engine Works Co., Ltd

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Crane, Ltd.
Goldie & McCulloch Co., Ltd.
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Canadian Ingersoll-Rand Co., Ltd.
Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.

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Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Northern Crane Works, Ltd.
Smart-Turner Machine Co., Ltd.
Waterous Engine Works Co., Ltd.

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Canadian Fairbanks-Morse Co., Ltd
Northern Crane Works, Ltd.

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Port Arthur Shipbuilding Co., Ltd.

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Tallman Brass & Metal, Ltd.

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Babcock & Wilcox, Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Pulp & Paper Mill Accessories, Ltd

Turbines:

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Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Smith, S. Morgan
Sturtevant Co. of Canada, Ltd., B. F

Twine:

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Victoria Paper & Twine Co., Ltd

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Diamond State Fibre Co. of Can., Ltd
Jenkins, Bros., Ltd.
Goldie & McCulloch Co., Ltd.
Hydraulic Machinery Co., Ltd.
McAvity, T. & Son.
Northern Foundry & Machine Co., Ltd
Port Arthur Shipbuilding Co., Ltd.
Smart Turner Machine Co., Ltd.

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White, W. H.

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Sturtevant Co. of Canada, Ltd., B. F.

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Goold, Shapley & Muir Co., Ltd.
Ontario Wind Eng. & Pump Co., Ltd

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Dominion Engineering Works, Ltd.
Hamilton Co., Wm.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co., Ltd
Smith, S. Morgan.

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Johnson, C. H. & Sons, Ltd.
Niagara Wire Weaving Co.
Pulp & Paper Mill Accessories, Ltd
Tyler, W. S. Co.
Taylor, J. A.
Tippett & Co., Ltd.
United Wire Works, Ltd.
Westbye, P. P.
Waterous Engine Works Co., Ltd.
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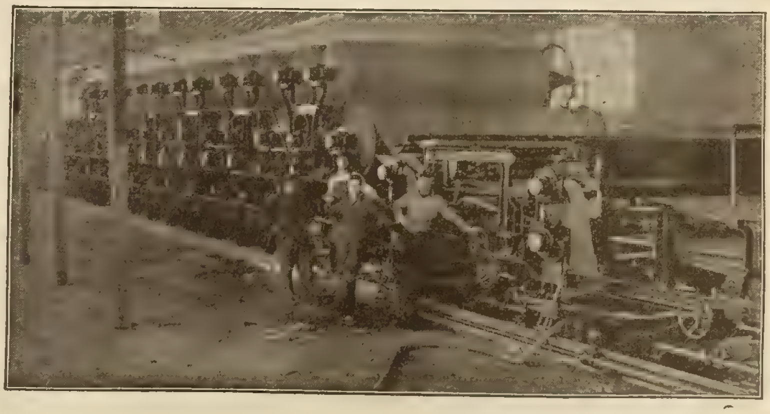

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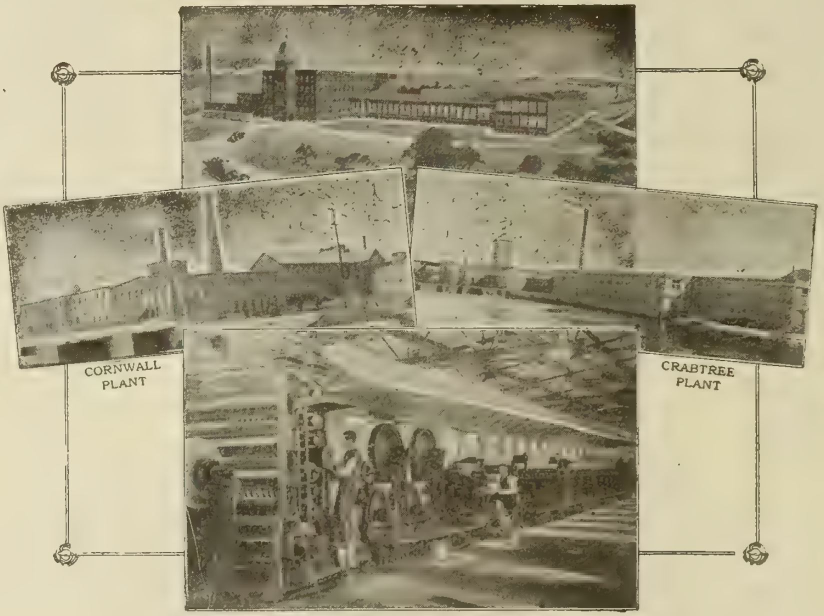

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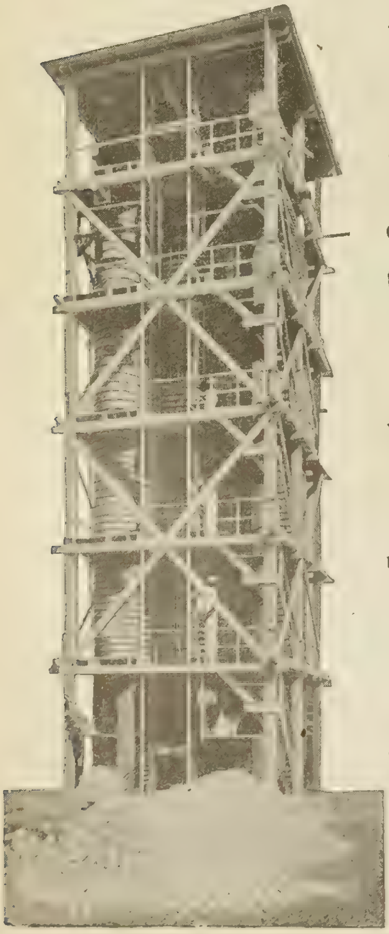

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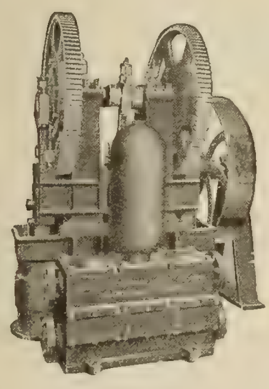

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XX. **Gardenvale, P. Q., July 13th, 1922** **No. 24**

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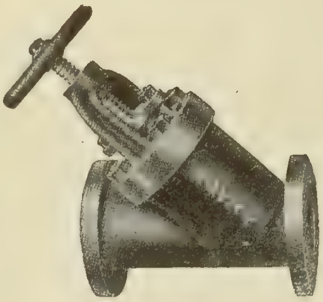

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:-: EDITORIAL :-:

A TURN IN PRICES

The paper trade was a bit surprised last week at the announcement that the largest producer of newsprint on the continent had decided to raise the basic price of this commodity from $70 to $75 per ton. The action, however, was not entirely unexpected nor has it been made without good reason. The market for newsprint has been exceedingly firm for some time past and neither manufacturers nor consumers have been storing more than normal quantities; in some cases stocks have even been allowed to run somewhat below normal. The fear of serious competition from Scandinavia and Germany in the American market has evidently been thoroughly discounted both because of more complete knowledge and wider understanding by American purchasers of the limited quantities that might in any case be expected from abroad and because of the somewhat unsatisfactory experience that some publishers have had with cheap foreign paper. On the other hand, both Canadian and American mills have been well supplied with orders even in the face of a rather extensive expansion of capacity in these countries.

At the time the price of newsprint was reduced to $70 it was expected that a drop of $5 a ton from the $80 price prevailing at that time would be the maximum cut, at least for a period. There were, however, apparently good reasons why the largest American producer should make an immediate reduction of $10 a ton rather than to anticipate making the drop in two stages. Canadian producers considered it advisable to assist in stabilizing the price of newsprint by establishing the same rate. Realizing that this would undoubtedly be the lowest price that newsprint would reach, many publishers considered it safe and wise to make firm contracts for the balance of the year. This is the circumstance which prompted the opinion, expressed recently, that a change in Canadian prices would be unlikely this year. As stated elsewhere in this issue, most of the production of Canadian mills is contracted for until 1923. No doubt much of the International Paper Company's output is likewise booked. There is no going back on a contract price. On the other hand, some consumers persist in buying from hand to mouth and many who have contracts for part or all of their normal requirements are finding it necessary to augment current supplies by buying in the open market. And the open market price is what current demand makes it.

It is apparently this excess consumption and demand, which requires the output of-high-cost mills, that has dicated the increase in price just at this time. From what President Dodge said at the convention in New York last spring, not many American mills could do much better than break even on the balance of costs and selling price then prevailing.

The improvement in the tone of the market has been growing, and has been evident for some time. The trade, however, was unaware that conditions would bring about quite so soon the advance in price on new contracts and extra paper that was clearly seen on the horizon. There may be an advantage all round in having the change begin now and develop gradually. Costs in some materials are sure to go up as winter comes on. Business the world over is getting on a more sound and stable basis, and exports of paper by the principal producing countries show fairly good recuperation, considering the very feeble condition of world trade not long since. There are, to be sure, certain complications, and an occasional relapse may be expected, but the patient has a fine constitution—several, in fact, and is surely getting back to health and strength. Improvement is greatly helped by a confident hopefulness, for which there is now abundant reason.

With this definite turn in the price of news print, there is likely to follow a better market condition in book papers. These have been in a rather bad way for some time. In spite a distinct improvement in magazine advertising the price of paper has not revived. It may remain in a comatose condition through July and August, but seems certain to recover in the fall.

THE FORESTS DEPEND ON US

In his speech of acceptance on behalf of the Republic of France for 125 bags of Douglas fir seeds donated by Mr. Charles Lathrop Pack, President of the American Forestry Association, Ambassador Jusserand made this significant statement: "The existence of coal and oil do not depend on us; we can consume it, not make it. But the existence of forests depends on us, and what does that existence mean? It means well regulated waters which will ensure the fertility of plains and forests, it means renewable stores of heat and force, renewable timber for our houses and a thousand other purposes. The forest is the friend of man; man should be the friend of the forest." The gift of 100,000,000 seeds of America's great fir to France and Great Britain is not only a notable recognition of the part that the forest played in the war and plays in the development and support of the human race but it is a noble effort to impress the value of the forest on the public mind.

It was a very keen remark of the great French ambassador that the forests depend on us for their existence and if this truth were but more widely recognised by those who make the forest their playground, there would be far less devastation of this important factor in our civilization.

CANADA'S BIRTHDAY

On July 1st we celebrated our Dominion's fifty-fifth birthday. There are many now living who can remember the first Confederation day, when the unconnected British colonies of North America promised solemnly to become a unit within the British Empire. These fifty-five years have wrought a change that is beyond the vision even of those men of steadfast faith to whom the Act of Confederation was due. East and West have been brought together across a distance greater than ocean's width, and the barren plain between has become one of the world's granaries. The word *Canada* has come to signify, not merely a half of the North American continent, but the home of a young nation, as yet only partly conscious, elementary in its ideas, and unformed in its habits; but still (thanks to the late war) anxious and able to take its place among the nations. During these fifty-five years our pulp and paper industry has grown from a mere beginning in 1867, and to-day is the principal item in our country's manufactured products.

These are a few of the great things accomplished during the past half-century — mainly, be it noted, by the generation that is now handing over its burden to its successor. But not all the developments of that period offer us the same reasons for self-congratulation. It is well to look at both sides of the picture.

Though we have now a budding national consciousness, we must not forget that its growth is as yet not at all robust, and its full bloom and fruition will be assured only if we tend and nurture it as its value deserves. The national interest is still subordinated, in large degree, to provincial and sectional interests; while personal interests at present exclude a view of the common weal to an extent that alarms many students of Canadian men and affairs. This immersion in our personal affairs, to the virtual exclusion of public duties, is so prevalent in Canada that our trans-Atlantic relatives commonly take it as typical of our country. The natural result is that Canada is today ruled to a great extent by demagogues and others of like tendency, whose interest is self-centred, to the exclusion of the interests that they publicly profess.

Nor are our habits unimpeachable in the sphere of social existence. Our chief city has lately earned the reputation of being the pest-house of the North American continent. The finger of scorn is being pointed at us by our southern neighbors with increasing regularity, and for just cause. Not until we make a united, national effort to control the illegal traffic in liquor and drugs, and other vicious tendencies for which our country is rapidly becoming notorious, can we consider ourselves on an equality with the citizens of the United States. They are at least making an honest attempt to "clean up" their country from coast to coast.

In the realm of finance, we have allowed, on a huge scale, a selfish manipulation of public and manufacturing services, of our natural resources and even of food-stuffs, that has made many millionaires, but has impoverished our country to a degree that we do not yet fully realize. Financial manipulators, still increasing in number, batten and grow fat on the bodies of those whose honest toil results in Canada's material well-being.

We have here presented, deliberately, the sombre side of the question, as an antidote to the self-satisfaction and self-congratulation that usually accompany and succeed the national birthday. If we are to have an ordered and logical development in Canada, we must face all sides of each question squarely.

COBWEBS

How appropriate for the Ottawa council of Carpenters to elect Mr. Tapp as president.

Howard Smith Paper Mills, Ltd., have issued another pocket book of tables for calculating paper prices. It is entitled "Paper Costs at a Glance".

It was with great regret that we read of the serious fire at Port Alfred which consumed a large stock of ground wood pulp belonging to the Chicoutimi Pulp Co.

The latest chart of printing sales and printers' paper purchases in the U. S., issued by the American Writing Paper Co. gives some interesting and encouraging figures.

Our compliments and best wishes to the University of Wisconsin for the success of their correspondence courses in Pulp and Paper Making. The establishment of this work is but another evidence of the desire on the part of the University to render the greatest possible aid to the state which supports it. The proximity and assistance of the Forest Products Laboratory makes it an appropriate and convenient place to carry on this work. With the support of the Wisconsin and United States governments and the co-operation of the American Paper and Pulp Industry there is every prospect for great success.

GOOD WORK, DON VALLEY

It is pleasant indeed to hear of real accomplishment. Last month, Don Valley Paper Co., had a very bad fire, causing a very considerable loss of material and shutting down the plant. In spite of difficulties it was only just one month from the day of the fire that the mill was again making paper; fire was discovered 6 P. M., June 30.

Our hat is off to Mr. Gain and his fellow workers.

Don't envy the fellow who seems to be doing better than you; study him.

Canadian Wall Paper Abroad

THE ARGENTINE AS A MARKET FOR WALLPAPER

Assistant Trade Commissioner C. Noel Wilde

(in Commercial Intelligence Journal)

Buenos Aires, May 18, 1922.— The Argentine Republic offers a favorable field for exporters of wallpaper, her imports amounting on an average to some 670,00 kg, or nearly 1,500,000 pounds, per annum. This product is not manufactured in the country. Up to the year 1914 Germany was the principal source of supply, followed by France, Belgium, and the United Kingdom in the order named. During the war the leading position, which she still maintains, was secured by the United Kingdom.

The following statement shows the imports of wallpaper into the Argentine for the period 1910 to 1920 inclusive, the figures being given in kilogrammes of 2.2 pounds:—

	Average 1910-1914	1915	1919	1920
Germany	324,819	70,452	......	161,519
France	149,993	89,610	25,877	76,706
Belgium	130,099	6,699	......	71,139
United Kingdom	107,349	348,409	267,779	491,556
United States	16,836	54,764	115,180	105,805
Italy	1,168	5,196	......	......
Sweden	5,859	92,731	......	57,433
Canada	......	2,074	630	9,732
Others	13,083	15,344	7,398	21,636
Totals	749,146	685,279	416,864	995,526

The above table shows clearly the predominating prewar position occupied by Germany, and the recent inroads made by United Kingdom manufacturers. It also indicates a growing demand for Canadian wallpapers, and this demand could be increased considerably if the suggestions outlined in this report were adopted by the manufacturers of the Dominion.

Styles in Demand

Wallpaper is generally selected to match the style of furniture and carpets in the room where it is to be used, and is usually renewed every two or three years, in accordance with the dictates of fashion. At present the tendency is towards dark colours, not too low in tone, the preference being for patterned papers with a background of violet, purple, or rich shades of dark red and blue. For the highest class of work, there is a good demand for papers imitating embossed leather. Low or soft tones are not required except among the English population, who prefer something of a quiet colour, with an inconspicuous pattern. Patterns showing a certain amount of contrast are in favour, with the designs carried out in blue and gold, orange or Indian red. Grey backgrounds, provided they are not too soft, are also popular.

Sources of Supply

Up to about a year ago, wallpapers of English origin were considered the best from the point of view of appearance, and the quality of the material used was excellent. Recently, however, French papers have been found more acceptable for the highest class of work, on accunt of both the better designs and the manner in which they are printed. In general, it may be taken that in the houses of the wealthier class of Argentine, where a rich effect is desired irrespective of expense, a French paper will be preferred; in the smaller houses, and for small rooms, the English product still holds the preference.

Germany is making strong efforts to regain the preeminence which she had before the war, and in the matter of price has, until recently, been able to defeat all competitors. Within the past few months, however, there has been a great increase in the cost of German papers, and owing to the low quality of the product it does not now seem probable that she will make any serious advances for some considerable time. The defects in the German wallpaper are due party to the quality of paper used, but principally to the very poor colours and the inferior method of printing—in fact, most of the samples examined by the writer were so defective that the colour came off on the hands , and the merest touch left an indelible mark.

Canadian Wallpaper Popular

Canadian wallpaper are becoming well known in the Argentine, and are popular with purchasers. The quality of the paper used is reported to be excellent, the coloring good, and the wearing qualities quite satisfactory. The only criticism levelled against them is that the paper is too good for the designs, and this makes them more expensive than those of similar patterns from the United Kingdom and other countries. In general, 30 per cent of the imported Canadian wallpapers are said to be quite suitable for the Argentine market, and to have a good sale.

A prominent commercial firm in Buenos Aires, in comparing the prices of wallpaper from various countries, exhibited a sample of Canadian wallpaper which sold at $1.40 per roll; a similar design produced in England sold at $1.20 per roll; and a German paper, also of a similar design, but markedly inferior in quality, sold at 85c per roll. The same firm pointed out that if Canadian manufacturers would produce designs similar to the French, using the same quality of paper as at present, the sale price would be about $4 per roll; this represents an increase of nearly 300 per cent, simply by a change in pattern, and the suggestion appears to be worthy of careful consideration.

It was also pointed out that Canadian manufacturers do not at present produce any good gold patterns, or the rich, dark effects of the better class of competing products. If Canadian papers were not quite of such good quality, and the colouring or design could be improved, it is stated that they could readily compete with the whole world.

A minor advantage enjoyed by Canadian manufacturers in foreign markets is that they supply excellent books of samples free of charge. This is not the custom of the trade in other countries, but it has an effect on the mind of the retailer, and predisposes him to encourage the sale of Canadian wallpapers in preference to those of other makers who charge for such samples.

Dimensions

The most suitable length for rolls of wallpaper is eight metres, and this is the length adopted by the majority of exporters with the exception of Canadians, who ship in 16-metre lengths; the opinion is expressed by retailers, however, that it would be better to standardize on 8-metre lengths, as these are easier to sell.

The reason for adopting this standard is that in the past all rooms in Argentine houses were four metres high, and one roll provided two widths of wallpaper the height of the room. Any other length of roll meant a certain amount of waste. Modern Argentine houses do not adhere to the old room dimensions, but the length of roll has become fixed in the find of purchasers as eight metres, and they always expect this quantity when buying. Architects and builders also calculate the number of rolls required to paper a room on the same basis.

The width of rolls is also of some importance, and and has considerable iinfluence upon the demand. French wallpaper is always 48 cm, (say 19 inches) wide; English wallpapers are generally 55 cm. Canadian wallpaper is sometimes 48 and sometimes 60 cm. (23½ inches) in width. Local importers express a strong preference for wallpaper only 48 cm. wide as being cheaper per roll, and purchasers having become accustomed to buying by the roll, do not take into consideration its actual dimensions, or the area of wall space which it will cover.

Present Market Conditions

The market at present is depressed, owing to the general financial conditions prevailing in the Argentine, and it is impossible to predict when an improvement will take place. Large stocks of wallpapers are held by importers, and these stocks will necessarily have to be absorbed before new orders can be placed in any volume. The Argentinian, who of course is the largest consumer, has found it necessary to economize during the past year, and consequently no renewals of wallpaper are being made except where absolutely necessary.

Representation

The best method of catering to the Argentine market is by means of manufacturers' representatives who have offices in Buenos Aires, and who call upon importers at regular intervals. These representatives should be kept supplied with full information in regard to prices, discounts, and particularly with samples of all new patterns which it is desired to introduce, or may be considered suitable for the country.

The representative chosen should be one who already handles collateral lines, such as paints, brushes, window glass, hardware or similar products—that is to say, a man calling upon the decorating, builders' supply and furnishing trades in general.

It is not feasible to sell by correspondence, neither is it usual to sell to importers direct.

The only other method of representation which would offer chances of success would be by travelling salesmen making periodical visits to the country and calling upon importers. Such salesmen usually have a complete technical knowledge of their product and, representing only one house, are generally more keen upon getting orders. On the other hand, their inability to come into frequent personal contact with buyers may cause them to lose sales, and the expense involved in travelling, maintenance, and salaries is probably greater, in proportion to orders received, than if the usual custom of employing a manufacturers' representative were adopted. A salesman working in the Argentine should have a good practical knowledge of Spanish, and be prepared to discuss the requirements of prospective customers in an intelligent manner.

Another proposal in regard to representation, which has been made on previous occasions, is that Canadian manufacturers of wallpaper should pool their interests for export work and appoint one agent to represent the whole group. As wallpapers sell largely on the basis of the suitability of design for the particular market in which they are offered, the various manufacturers cannot be said to compete in the ordinary sense of the term, but more or less supplement one another. Thus a combination of the kind suggested would give the local representatives a chance of appealing to the market on a wider scale, and the importer would have a far more complete choice of patterns. This system has been adopted by the wallpaper manufacturers of the United Kingdom, and the statistics of imports shown above indicate that it has met with success.

Packing

The style of packing for wallpaper is standardized throughout the world. The higher qualities are packed in cases of two hundred rolls, and are protected against sea air by waterproof paper or other suitable material. The cheaper grades are packed in bundles of three hundred rolls, more or less, also protceted by waterproof paper, but covered with burlap or hessian, each bundle being tightly and firmly bound or hocped to prevent damage to the contents through friction.

No special precautions need be taken for shipment to the Argentine. It should be borne in mind, however, that customs duties are levied on the gross weights of packages, so that reasonable care should be taken to make packing cases or coverings as light as possible, consistent with safety and full protection of contents.

Terms of Payment

There is no fixed practice with regard to terms of payment. Many of the importing houses are satisfied with cash against documents, though some require thirty or sixty days terms, and German manufacturere are offering ninety daps. Letters of credit are not now acceptable, although a certain amount of business was done on these terms during the war and the boom years of 1919 and 1920. In general, terms of credit have little influence on the placing of orders as compared with the quality of the product and the demand for the designs offered.

Before accepting orders from new customers, it is always wise to obtain reports upon their financial standing. So far as the Argentine Republic is concerned, such reports can be obtained in Canada from the two well-known firms established for the purpose, or from the head of a bank which has a branch in Buenos Aires. Manufacturers' representatives will frequently, when requested to do so, obtain financial reports upon new customers, and attach them to the orders to which they refer. The expense of obtaining these, however, is usually considered as a charge against the manufacturer.

All quotations should be on a basis c.i.f. Buenos Aires, or at least f. o. b. Canadian port. Prices f. o. b. factory are useless.

Customs Duties

The tariff imposed on wallpaper is high, and is calculated at a rate of 32 per cent upon a fixed valuation, irrespective of the invoice price. In practice this means that duties are specific. Calculations for customs purposes, as mentioned above, are based upon the gross weights of packages and contents.

The following shows the duties chargeable, the items having been converted into Canadian currency in cents per pound, exchange being taken at par:—

Fraction Argentine Tariff	Description	Duty Cts. per lb.
2599	Common wallpaper	4¼
2600	The same, common gilt, silvered or bronzed	11¾
2601	The same, stamped or imitating leather, varnished or not	10
2602	The same, gilt, silvered or bronzed	25¼
2603	The same, imitating cloth, without gilding	16¾
2604	The same, gilt, silvered or bronzed	30¼

There are no preferential tariffs in the Argentine Republic, and no treaty rates.

Summary

It will be seen that the most important point for the consideration of Canadian manufacturers is an improvement in design, and this improvement is required not on account of present defects, but in order to bring the patterns more into line with the high grade of paper on which they are printed. Of minor importance are the questions of standardization of rolls and the method if representation in the Argentine. No other changes appear to be either necessary or desirable.

On the whole, Canadian wallpapers have a good reputation in the Argentine, and the outlook for them in the future is distinctly encouraging.

THE WALLPAPER MARKET IN THE UNITED STATES

Trade Commissioner Frederic Hudd In Commercial Intelligence Journal

New York City, June 3, 1922.— The market for wallpaper in the United States is extensive. The demand in the cheaper grades appears to be largely supplied by local production, and over 90 per cent of the wallpaper sold is of domestic manufacture.

The writer has been in contact with the more important importers of wallpaper, and a variety of opinions were expressed with regard to Canadian-made wallpapers finding a market here. One importer expressed the opinion that were Canadian papers on a par with the English papers a quantity of them could be sold. One firm has imported Canadian papers for the first time this season, and is not yet in a position to know from experience to what extent a market for Canadian papers could be developed. A line produced by one Canadian manufacturer is selling well, but the complaint is made that the assortment of patterns is very limited.

It would seem that imported papers are more carefully cut than the domestic, the colours are more durable, and the impression is clearer. The main thing in selling wallpaper is the design, one importer said, and imported designs have always been considered better than the domestic. One importer has expressed the opinion that imported papers are unable to compete with the American manufactures in price. He produced various papers which had been copied, and stated that when an American manufacturer finds a good paper he frequently copies it. This can be sold for less because there is no duty to pay. An imported paper selling at $1.50 wholesale was shown, together with the domestic copy on cheaper stock which wholesales at 37½ cents. The American manufacturer produces more cheaply because his colours cost him less, although as a rule they do not stand as well.

Possibilities For Canadian Papers

The conclusion reached is that the development of a market in the United States for Canadian wallpapers would depend chiefly upon the ability to supply original designs. The European manufacturer is willing to pay his designer for original ideas, while the American manufacturer does not care to make this outlay and relies chiefly on copying a standard design, which is transferred to the paper mechanically. One importer expressed the opinion that a market for the Canadian product could be built up by Canadian manufacturers either producing original designs or novelties or else being able to produce grades equal in style and quality to those now manufactured in this country at a price which would enable the dealer to buy advantageously. In spite of this opinion, the writer doubts whether it would be possible for Canadian manufacturers to compete to a large extent in grades similar to those produced in the United States factories. There is the more or less equal cost of production, and the additional cost of duty must also be considered. The majority of importers interviewed seem to agree that Canadian wallpaper could not be imported in large quantities. Imports represent only a small percentage of the total domestic production, and one opinion was expressed that, "regardless of the facts, the United States home consumer would always be inclined to think that a paper made in Europe would be better than a Canadian paper".

The writer is nevertheless of the opinion that there is a market here for Canadian wallpapers of a special grade, of distinctive design and good workmanship. The cost of production would determine the extent to which a market for this paper could be developed. The fact that Canadian papers have already been introduced in this market, and that the imports from Canada have almost trebled in one year, is some indication of the possibilities for a still greater market in special and distinctive grades. There is comparatively little knowledge of Canadian wallpaper among importers. Some have never seen samples of Canadian papers, so that they do not know wether the designs and colours would be suitable for this market.

The importance of personal contact cannot be overestimated, and it is felt that Canadian wallpaper manufacturers might well encourage an interest in their product here by bringing samples and prices to the attention of importers. At present Canadian manufacturers are undoubtedly concentrating on the class of goods for which there is a demand in Canada, but those interested in developing a market in the United States should not underestimate the importance of special grades.

The consensus of opinion is that the appointment of resident agents is inadvisable. The market is already covered by distributing concerns which are in touch with the current demand; and this is undoubtedly the best method, particularly in view of the fact that it would be very costly to canvass the entire United States with a limited line of goods. Importers seem to prefer quotations f.o.b. point of delivery. The average importer does not want to be bothered with questions of freight and customs. He prefers to leave these matters to a broker.

Exports And Imports

Judged by exports and imports, the wallpaper industry has greatly expanded in the United States in the past few years, as the following figures will indicate:—

	Exports	Imports
1921	$ 590,549	$363,269
1920	1,251,743	363,269
1916	365,535	329,154
1914	453,412	933,777

It will be noted that while in 1914 the imports exceeded the exports, the latter have increased and been in excess of imports since 1916, although the exports of 1921 show a heavy decrease compared with the exports of 1920, even taking into account the fall in prices. This is undoubtedly due in large measure to the general business depression in 1921. Imports show an increase.

Imports of wallpaper into the United States come chiefly from the United Kingdom, Germany, Japan and France. Following is a comparison of the imports of wallpapers by principal countries in 1920 and 1921:—

Canada	$ 5,191	$ 13,835
France	23,870	21,220
Germany	42,333	159,410
United Kingdom	200,697	59,691
Japan	72,077	100,096

It will be seen that imports from Germany have greatly increased, while the imports from England show a corresponding decrease. There have been increases in the importations from Belgium and Japan, and those from Canada almost trebled.

The wallpaper imported from Japan is made of woven grass on a paper backing. Formerly Japan made a good deal of imitation leather, but this industry is practically non-existent at present, so that importations from Japan now consist wholly of what is known as grass cloth. This is a product that can only be made in Japan, and it is so different from ordinary wallpaper that it is no sense competitive.

The Question Of Duty

At the hearings on Tariff Revision before the Committee of Ways and Means of the United States Senate, the President of the Wallpaper Manufacturers' Association urged that the present duty of 25 per cent on imported wallpaper should be retained, particularly in view of the low prevailing value of foreign money units, and particularly of the German mark. The German exporter has been at a great advantage on this account, and the fears of the manufacturers regarding German competition have to same extent been realized. Questioned on this point, one large wallpaper manufacturer said: "If the American buyer has not benefited by the low prices at which he could buy German goods, it is due to the fact that these low prices have not been generally advertised, and the trade at large is not aware of its opportunities". The present duty on printed hanging paper is 25 p. c., and it is proposed to levy a new duty of 3 cents per pound plus 20 per cent ad valorem: This would appear to be aimed at the low-priced German goods, but importers feel that the proposed duty would also place an excessive burden upon those superior grades which are not successfully manufactured in this country.

Domestic Production

The latest figures available regarding the production of the wallpaper industry in the United States appear to be for the year 1914. In that year the volume of production was 96,527 tons. There were 48 establishments and 4,738 employees. The capital invested in the industry was $17,620,000; and the wages paid were $2,703,000. The raw material cost was $8,536,000, and the value of the product $15,887,000, while the value added by the manufacturer was $7,351,000.

BOUGHT SIX PUMPS TO LIGHT FOREST FIRE

A remarkable demonstration of the efficiency of a forest fire hand pump in checking the spread of a threatening fire was given recently in the highlands of Rensselaer county New York. A crew of men were fighting a fire that, starting in the grass, had run into the timber and, backed by a high wind, was spreading rapidly when the district ranger arrived with a pump. Lining the men up behind him he started down the fire line deadening the blaze and enabling the men to attack it with shovels, hose and axes. The performance so impressed neighboring farmers that they at once requested their town board to purchase six of the pumps as an addition to its forest fire fighting equipment.

It is not till the frost is gone that the beautiful flowers bloom. Thaw out that frozen face and smile.

SWEDISH WOOD-PULP AND PAPER INDUSTRIES

Production of wood-pulp has been increasing during the first months of the year, while prices have shown only weak signs of recovery. The following table gives capacity and production of the chemical wood-pulp industry, the quarterly average for 1921 being compared with the figure for the first quarter of 1922.

	Thousands of tons, calculated dry weight Capacity	Production	Production in per cent of capacity
Sulphite			
1921	213	126	55
1922	213	151	70
Sulphate			
1921	65	29	45
1922	65	54	77

With regard to mechanical pulp the production was 70 per cent. of capacity during the first quarter of 1922.

The big importers of woodpulp are England (especially for sulphite, the United States (sulphate) and France.

The employment statistics of the paper industry for January 1, 1921 gives 75 per cent. as the ratio of workers engaged in the industry out of the 10,000 employees of normal times (1913). On June 1, 1921 the figure was down to 60 per cent. but has increased to 65 per cent. at the turn of the year, and to 70 per cent. on April 15, 1922.

As usual the volume of production displays a much more rapid growth than is suggested by the employment figures, which may be readily discerned from the following table:

Quality	Normal production (1913) Tons per month	Per cent of normal capacity June 1. 1921	Jan. 1. 1922	April 15. 1922
Wrapping paper	16,000	30	40	90
News rolls	15,000	70	90	90
Letter paper	2,000	22	15	55
Paper, other qualities	1,200	18	18	40
Cardboard	6,500	20	25	35

Exporters of pulp and paper have still to meet severe competition from countries with a depreciated currency but the last months have shown some improvement also in this respect.

Exports of wood pulp and paper were, respectively, in metric tons, dry weight: 1913 — 847,100 and 212,670; 1920 — 880,600 and 38,830; 1921 — 479,800 and 183,100 (first 4 months 34,900 and 38,830); 1922 (first 4 months) 94,600 and 58,500. The values for strong sulphite per metric ton was, in June each year, in Swedish Kronor: 1913, 130; 1914, 133; 1915, 144; 1916, 380; 1917, 370; 1918, 360; 1919, 365; 1920, 938; (966 in Sept.) 1921, 280; 1922 (195 in April.)

CANADIAN COMPANY HANDLING HEATING SYSTEM

One of the most difficult problems in the manufacture of paper is efficient and economical drying of the product. From copies of letters before us it appears that one of the most successful improvements in this part of the mill has been developed by the Fulton Company of Middletown, Ohio. The Fulton Vapor Circulating System is in successful operation on machines making a very wide range of papers, some of them operating under quite difficult conditions. The amount of paper dried per ton of coal and the increased record in efficiency, are very encouraging.

This system is represented in Canada by the Beveridge Supply Company, St. Paul Street West, Montreal.

A Dictionary of Pulp and Paper Mill Terms

Readers are requested to report any errors or omissions,—Ed.— Continue from last issue.

Recovery
(1) The system whereby sulphur dioxide liberated by heat in the digester is salvaged. It is "relieved" through water-cooled pipes to a tower where it is absorbed in water and blended with freshly made acid, or absorbed directly in a tank of acid.
(2) The system used in a sulphate or soda pulp mill whereby the chemicals used in digesting the pulp are obtained in a form for re-use.

Rectification
(1) To purify by a second distillation, as in the case of alcohol, which is called rectified spirits of wine (abbreviated to S.V.R., for **spiritus vini rectificatus**) and has a strength of about 90 p.c. of alcohol by weight.
(2) The conversion of an alternating to a direct or continuous current.

Red Lead. Sometimes called minium —an oxide of lead approximately Pb_3O_4, but not of uniform composition. It has a specific gravity of 8.62, mixes well with linseed oil, and dries quickly. It makes a good protective coat for structural steel. Used much for pipe jointing.

Red Oils. See **Turkey Red Oils.**

Redwood. A tree **Sequoia semper virens** growing to a great height and girth, found on the Southern Pacific coast of North America. May be cooked for pulp by either sulphite or sulphate processes. Fiber is longer than spruce. The stock, which has only been cooked experimentally, is not readily bleached.

Reducing Agents. Substances which are oxidized at the expense of oxygen of oxides, being themselves usually oxidized, as in the case of carbon, which is used generally in recovering metals from their ores.

Reducing Valve. A valve so constructed that when placed on a pipe line carrying a liquid or gas the pressure is reduced after passing the valve.

Reel. The revolving frame or drum which receives and winds the paper coming off the machine, and from which the paper is unwound by the winder as it produces the finished rolls. This is necessary, as the machine runs continuously and the reels take care of the output while the finished rolls are being removed from the winder.

Refiner, Refining Engine. There are several different forms of this apparatus, named after patentees or designers. Its function is to eliminate knots or tangled bunches or fibers, and to bring about a closer relation between the fibers, filler, size and color. Mill men in America usually refer to this apparatus as "The Jordan," irrespective of the maker. It consists of a cone-shaped hollow casting called the shell, into which a cone-shaped plug is fitted. The inner surface of the shell and the outer surface of the plug are fitted with bars on edge usually, with wood fillers to hold them in place, as in the beater-roll except that these converge to the apex of the cone. The plug revolves on a shaft at the axis of the cone, and can be moved horizontally a short distance by a handwheel working on a screw that presses against the end of the shaft. The stock is fed in at the apex of the cone, and is delivered by centrifugal force assisted by gravity at the base.

Refraction. The change of direction experienced by a ray of light in passing from one medium to another of different density. Similarly the change of direction on lines of flow of electric currents passing from one conducting medium to another of differing conductivity.

Refractory. Substances which fuse only at very high temperatures, such as fire clay, fire brick, lime, calcined magnesia, etc. Used for furnace linings.

Register. The relation of impression on a sheet after passing through the printing or lithographing press, to succeeding impressions of different colors.

Regulating Box. See **Flow Box.**

Relative Humidity. See **Humidity.**

Relay. An electric device whereby a small current is used to operate a magnet, causing the opening of a switch or closing of a circuit to bring a more powerful current into action.

Relief. The lowering of pressure by opening valves, permitting gas or liquor to escape either into the air or into the recovery or reclaiming system as in sulphite mill.

Relief or **Relieving.** The period when digesters are being relieved into the recovery system.

Repped or **Ribbed Paper.** Fancy paper having its special effect imparted by steel rollers. Imitated by a special weave of felt.

Resin. There are a number of resins, which may be defined loosely as any exudation from a tree, insoluble in water. This word is also used for rosin.

Resorcin, Resorcinol. Meta-dioxy-benzene. A white crystalline compound used in the manufacture of dyes.

Retting, or **Rotting.** The process of steeping flax or other vegetable in water to remove soluble mucilaginous material.

Retrees. Paper culled from the best grades, sold at lower price, seconds, from French **retiree,** "withdrawn."

Return Wire Rolls. Brass or brass covered rolls carrying the machine wire back from the couch to the breast roll, adjusted to maintain the desired tension on the wire.

Rewinder. Special machine for making finished rolls from the rolls coming from the paper machine.

Reversible reaction. Some reactions may proceed in either direction, depending on conditions. Sulphur dioxide passed into dilute solution of iodine produces sulphuric acid and hydriodic acid, but if strong sulphuric acid be added to strong hydriodic acid, the reaction is reversed, giving sulphur dioxide and iodine. Such reactions are usually indicated by changing the sign of equality so two arrows with single barbs one pointing each way.—

Revolving Boiler. See **Rotary.**

Revolving Burner. See **Sulphur burning.**

Revolving Screen. See **Screens.**

Rhea. See **Ramie.**

Rheostat. An electric instrument containing units of metal so arranged that when it is placed in circuit, the resistance may be increased or diminished.

Rhodamines. Coal-tar dyes formed by the condensation of meta-amido phenol and some of its derivatives with anhydrides of dibasic acids such as succinic.

Riffle. A trough or spout the bottom or which may be covered with cocoanut matting or other fabric or divided by traverse bars, boards or slats designed to hold back sand or other dirt in the stock flowing through it.

Right-Handed Screw. The normal form of screw. When the axis is vertical, the thread runs upward from left to right.

Riser
(1) The vertical part of a step.
(2) A main pipe carrying water, steam or stock from one floor to others above.
(3) An opening in a mould whereby air leaves the cavity as metal is poured in, when the liquid metal shows in the riser, the mould is full.
(4) The metal or wooden block upon which stereoplates are mounted to make them "type high."

Rising Gate, Rising Main. See **Riser.**

Rolling Friction. The friction of a wheel rolling along a smooth surface. See **Sliding Friction.**

Roofing. Heavy wood pulp or rag papers impregnated with asphalt, tar or creosote.

Rosaniline. R-hydrochloride or r-acetate are used as dyes under this name and also called magenta and fuchsine.

Rosin. A solid residue left after distilling turpentine from the exudation obtained by cutting or "boxing" the southern long-leaved pine. It consists mostly of abietic acid, and when this is combined with soda, a soap is formed which is the basis of rosin size.

Rosin Size. A semi-solid mass composed of water, rosin soap and free rosin. When this is treated with water —emulsified—it forms a white liquid known as "size milk" which is then added to the stock, and precipitated in the alum, giving the paper water and ink resisting qualities.

Rossing. Removal of bark from pulpwood by mechanical means before shipping to pulp mill. Usually understood to be by knife barkers. When by drum barkers is termed "drum barked"—"Sap peeled" when the bark is removed during the season when the bark "slips."

Rot
(1) The result of chemical action bringing about decay.
(2) A result of the action of certain fungi upon wood or cellulose. The fungus removes the elements of water in its life action, and the dehydrated fibers become brittle and appear dry and powdery, hence such action is usually called dry rot.

Rotary Boiler. A boiler for cooking rags or old papers, usually rounded both ends. (Sometimes spherical.) It is revolved on its long axis by a geared drive, and steam is admitted through the trunnion. The stock is loaded through one or more manholes.

Rotary Burner. See **Sulphur Burning.**

Rotary Pump. A form of pump which propels liquids by high-speed paddles or volutes in a shell-shaped casting. The liquid entering at the axis is thrown to the outer side of a spiral tangentially and is thus thrown to the points of use through pipes.

Rotary Screen, See **Screens.**

Roll. See **Beater, Couch, Press, Pony, Sweat.**

Roll Bar, Fly Bar. See **Beater.**

Rope. Paper stock from old ropes contains manila, sisal, jute or hemp.

Rope Browns. Brown wrapping made from rope stock, expected therefore to be of high quality and strength.

Royal. See **Sizes of Paper.**

Safety Paper. Paper for cheques or other financial use so made, with special chemicals in the furnish, that erasures cannot be made without being apparent in the surface or appearance of the paper.

Safranine...A red aniline dye, used for pink papers of lower grades; very sensitive to light.

Sal Ammoniac See **Ammonium Chloride.**

Saleratus (saleraetus) See **Sodium bicarbonate.**

Sal Soda See **Sodium carbonate.**

Sal Volatile. Ammonium Carbonate.

Sand Trap. A device to collect grit and fine dirt in the beater. It consists of a shallow trough in the bottom extending across the beater a short distance in front of the roll, and covered with a screen plate.

Sap Wood. The outer rings of a tree; the recent growth called the alburnum, containing the sap, in distinction from the heart wood.

Save All
(1.) Of the Fourdrinier machine the shallow pans of wood or metal placed under the table rolls next to the breast roll, and sometimes extending towards the suction box. They serve to catch the machine backwater draining from the wire, and direct it to the fan pump where it is ixed with fresh stock, or into the pit under the wire part.
(2.) Apparatus designed to recover from mill effluent material held in suspension. They are of two general types: sedimentation tanks and strainers. The former are used chiefly in recovering paper loading material as well as fiber, while the latter serve mainly for fiber and other comparatively coarse material. There are many different designs of both types and a large number have been patented. Among the best known mechanical saveall are the Impco pneumatic, Fullner, North,, Bird, Witham and Woods.

Savery Joint. One of the various forms of steam joints, admitting steam to and removing condensed water from the dryers on a paper machine, through the journal on the driving side on each dryer.

Saw Deck. The platform in which the saws of a saw mill or slasher operate.

Schweitzer's Reagent. A solution of copper hydrate in ammonia water. It dissolves cellulose and is therefore used in laboratory investigations. Used also in the manufacture of artificial silk.

Score Cutter. A special cutting disc revolving on a hard steel cylinder, over the face of which paper passes to winders. It makes a cleaner cut than the slitter.

Screens.—Apparatus designed in general for the classification of material according to size.
(1) Stock screens for paper and pulp are of two general types: I, flat; II, revolving. I. Flat screens are of various mechanical design. The best known types are either diaphragm or oscillating. In both they consist essentially of a shallow vat, the false bottom of which forms the screening surface, and consists of slotted brass or bronze plates. In operation the fiber is sucked or washed through the slots of the plates while the coarser material is retained and thereby removed from the stock. Such screens are used mostly in sulphite mills or on paper machines. II. Revolving screens, according to the operation, may be either (a) rotating or (b) centrifugal, both of which vary very greatly in design and mode of operation. (a) Rotating screens consist essentially of cylindrical frames essentially of cylindrical frames rotating in a horizontal position and are either solid and slotted or covered with removable curved plates slotted similarly to the plates of flat screens. They are either of the in-flow or outward-flow type, depending on the movement of the stock in relation to the rotating cylinder. They are of many designs and are largely used in connection with paper machines and to some extent on mechanical pulp. (b) centrifugal screens: These again are of varied design but consist essentially of a horizontal or vertical cylinder of perforated brass or copper, inside of which the stock is fed and thrown by means of a revolving fan against the interior of the perforate screen. The coarser material is retained and continuously removed while the fiber stock passes through the perforations. They are used very largely for screening mechanical pulp and to a large extent for chemical pulp.
(2) Chip Screens are used to separate chips the right size for the digester from over-size pieces and sawdust. The rotary type is an inclined cylinder. The upper end is perforated with holes that pass the sawdust and retain all chips, the lower portion with holes that pass the proper size chips and retain oversizes, which are discharged to a chip chrusher. The flat type has two inclined shaking flat screens the upper one has large holes that retain oversize and pass good chips and sawdust to the lower, which retains good chips and passes sawdust.

Scrows. Scraps of hide dried and bundled together, bought by paper mills that make their own gelatine size. Term not used in America.

Scrubber An absorbing tower, the object of which is to purify gases by the absorbtion of impurities or the principal gas in a solvent suited for the purpose. The gases pass in at the bottom and ascend past various forms of baffles, meet a decending stream of sovent,—in most cases waterl. Scrubbers may be vertical or horizontal.

Self-Colored. A term employed to signify that no coloring matter has been added to the pulp. More often the term natural is used.

Sensitized paper. Paper made for photographic or chemical work, rendered sensitive by coating or dipping in some fluid which reacts to light. See **Blue print paper.** Such papers must be made of long fibred stock and well sized to prevent disintegration in the washing bath used to develop them.

Shake
(1) The reciprocating motion in screens, may be vertical or horizontal.
(2) The horizontal motion of the breast roll end of the fourdrinier part of a paper machine.

Sheet Calendering. Calendering of paper in sheets in place of rolls for special effects, especially in air dried papers.

(To be Continued.)

With the Woodsmen

WORK PLANNED FOR WOODLANDS SECTION

BY O. M. PORTER Secretary-Treasurer, U. S. Woodlands Section.

Probably not less than ninety per cent of the paper manufactured in the United States uses wood as its basic raw material. The paper industry has drawn heavily on the first growth forests of the northeast and lake states, and is now expanding to the southern pine regions, the Pacific northwest and Alaska. Already paper manufacturers feel the pinch of our reduced timber. Each year it is necessary to bring pulpwood from greater distances, and not only is the quality of the pulpwood available deteriorating, but the price is unfortunately steadily increasing.

The Woodlands Section of the American Paper and Pulp Association was organized for the purpose of increasing the efficiency of the woods operations, of encouraging the practice of forestry on timberland holdings, and of providing a medium for the gathering and dissemination of information which will promote the permanency of the woods operations of the pulp and paper industry. Realizing the necessity for the careful management of the remaining pulpwood stands, and appreciating the possibilities in the application of forestry methods to conservative utilization, the Woodlands Section has appointed a Forestry Committee to develop suggestions covering the application of forestry methods to the woods operations of the paper industry. It is expected that this Committee will develop recommendations covering the following general subjects:

1. Fire Protection.
2. Maps, Timber Estimates and Working Plans.
3. Reforestation, both natural and artificial.
4. Marking, Scaling and Utilization and Cost Studies
5. Railroad and Camp Location, Stream Improvement, etc.

It is hoped that suggestions along these lines will be sufficiently developed for consideration at the fall meeting of the Woodlands Section, so that the foresters in the paper industry may be in a position to make definite suggestions for the application of their training and experience to the business of forest management and pulpwood production.

Work of the Trade Customs Committee

The paper industry has made tremendous progress within the last few years in the development of its mill production and selling efficiency. New methods and new machinery have been introduced to the point of almost doubling normal capacity. Development in the woods end of the industry has not kept pace with that at the mills. Pulpwood is pulpwood, and it is difficult to introduce innovations in logging methods which have been practiced on the timberlands of this country for generation.

Pulpwood is produced in large and small quantities by farmers, contractors and operators. The ownership of pulpwood passes through a number of hands before the wood itself reaches the mill. During slack seasons, the local farmer may cut from five to fifty cords of wood. This is handled perhaps by the country storekeeper, as a medium of exchange. The pulpwood broker may aggregate a number of these small purchases, and the mill buyer may finally get sufficient quantities for shipments. There are no standards governing these transactions, such as there are in the case of any number of grades of paper which are merchandised in accord with definite, agreed-to trade customs. It is with the thought of developing such standards, therefore, which might be mutually advantageous to the buyer and the seller, that the Woodlands Section appointed a Pulpwood Trade Customs Committee, representing the several forest producing regions of the United States, to consider this whole proposition of pulpwood standards or specifications. The committee had its first meeting in the offices of the Association on June 6, and drew up preliminary recommendations covering the points to be considered in the development of grades of pulpwood and recommended the employment of official arbitration scalers for the several pulpwood regions. These recommendations are now being worked over by local committees in the regions referred to, and will be given general publicity when they have finally been accepted.

Woodlands Section Has Busy Program

A great many woods are used in the manufacture of paper pulp. Among these, spruce, hemlock and balsam have in the past figured very largely. The increasing shortage of available pulpwood timber and the development of the industry has necessitated the introduction of new processes and new species. Among the hardwoods which are now being used with greater or less success, are poplar and yellow birch. One of the problems in connection with the utilization of these species is the difficulty of driving. The Section is collecting information on this subject for the mills who are using these species.

In the last three months many offers of pulp wood have come to the Woodlands Section of the American Paper and Pulp Association. Much in Canada, including Quebec and Nova Scotia, but some large quantities of wood were offered from the Vermont region.

KITCHENER NEWSPAPERS MERGED

Amalgamation of the Kitchener Daily Record and Daily Telegraph will be brought about at the end of this week through the purchase by the former of the business and the good-will of the latter. The Daily Telegraph, which will thus pass out of existence, has had a long and honorable career, having started as a weekly in the middle of the last century, appearing in daily form since 1896. For the past year both papers have taken a leased wire service from the Canadian Press and are publishing very creditable papers. The Record is owned by W. D. Euler, M. P., W. J. Notz being manager, whereas D. A. Bean is managing director of the Telegraph.

During the first five months of 1922 Canadian mills produced 455,515 tons of newsprint. If they continue at the present rate throughout the remainder of the year, which it is more than probable they will do, the output this year will reach approximately 1,250,000 tons and constitute a new record. This will be equivalent to more than double the output of any single year prior to 1917.

JOHN McPHERSON DEAD

The death occurred yesterday at Three Rivers of John McPherson, after a brief illness. Mr. McPherson was sixty years of age, and was a life-long resident of Three Rivers where he held the position of cashier of the St. Maurice Lumber Company. The editor recalls a very pleasant conversation with Mr. McPherson only a few weeks ago, when he seemed in excellent health.

Watermark Substance Number

By Louis A. Colton

Standardization is in the air. Everyone is talking about it, and asking for it. Needless to say, paper distributors are for standardization, because they have plenty of evidence of its value. A few years ago there existed nothing less than chaos in the manufacture and distribution of paper. Standardization of sizes, weights and qualities was absolutely unknown. Closer co-operation between merchants and mills has resulted in a certain amount of chants and mills has results in a certain amount of stand-standardization. True, not all of us were seeking standardization. We merely wanted some definite rules to govern the manufacture and distribution of paper. But the adoption of these rules was, though we did not realize it, merely a step toward standardization.

I have always been in favor of clearing away from the paper business the air of mystery that formerly enshrouded it. Paper salesmen and merchants now have mechanical means of testing and correctly judging paper. The matching of paper, therefore, does not usually offer any particular difficulty.

The Final Step

There is one step more to be taken, however, before the salesman can sell and the distributor advertise in terms that will be understood by the buyer. That is the watermarking of substance numbers — the placing of the substance number immediately under the watermark.

The trade did not at first take kindly to substance numbers. They were thought to be unnecessary, even confusing. But substance numbers quickly made their way on their merits, and I doubt very much if anyone connected with the trade would care to go back to the old methods.

Now that writing papers have been standarized with substance numbers—when I say writing papers I refer to bonds, linens, ledgers, flats, etc. — I can see no reason other than the additional expense involved, for the absence or omission of the substance number under the watermark.

This additional expense would not be great, if the promised developments in standardization materialize. There are now too many lines of paper on the market — too many colors in a line, too much variety, too many brands — and I believe the time is rapidly approaching when the best manufacturers will confine their efforts to fewer grades, thereby minimizing the objection to watermarked substance numbers on the ground of prohibitive expense. Reduction of the number of different weights, etc., will mean the need of fewer dandy rolls, and my own opinoin is that this expense is by no means prohibitive. It will, in fact, be offset by the longer runs possible under the plan of standardization.

Why Not Book Papers Too?

I do not believe the watermarking of substance numbers need stop with writing papers. Why not watermark the substance number in every sheet of paper now bearing a watermark? I refer, of course, to the higher grades of book paper. Inasmuch as book papers are already standardized, as regards weight, the inclusion of the substance number in the watermark can be done with even less trouble than with writing paper.

I am not attempting to revolutionize the manufacture of paper when I offer these suggestions. As a matter of fact, there is nothing very new in the idea. Several manufacturers, chiefly in the writing paper field, have watermarked the substance number successfully — with benefit to themselves as well as distributors and consumers. One well-known mill's bond has borne numbers as far back as my memory serves.

How Trouble Is Caused

The substance number watermarked in a sheet of paper means to the distributor that he is, without chance for error, giving the printer what he asked for. It means to the printer that he got what he wanted, and this is more significant than appears on the surface. Printers have frequently complained that work has been delayed, or even ruined, because some sheets of paper appear to be thinner or thicker than others. As I have said in other articles, paper manufacture is not an exact science. I doubt, however, whether any of the leading mills would let paper of a given weight go out with such a variance in thickness as to cause trouble to the printer. My guess is that in some such cases the printer has simply got hold of paper of different weights, though of the same brand. Such a mistake might easily occur. Watermarked substance numbers would be a guarantee against such errors.

I should like very much to see a discussion of the matter of substance numbers in the watermark, and I feel safe in predicting that paper merchants as a whole would welcome such an innovation.

—The American Paper Merchant.

ELECTRICITY IN PAPER

A reader of the Pulp and Paper Magazine writes that he has been having difficulty with electricity in paper which is fed from a roll to a lithograph machine and asks for advice on correcting the difficulty. It is a bit unusual to use roll paper for lithographing and the ordinary methods of handling the problem are not so well adapted to this case. For instance, it would take a great deal longer for the inside of a roll of paper to come to a moisture content in equilibrium with the humidity of the room than would be the case with sheets of paper that could be hung out in the same atmosphere.

Having submitted the question to several authorities on the subject, the Pulp and Paper Magazine is glad to publish the following remarks which may be of service not only to our correspondent but to others who may be having similar trouble.

"There is only one satisfactory way of preventing trouble from static electricity and that is to keep the paper sufficiently damp on the paper machine to prevent the formation of any static charges.

The removal of static charges from a sheet of paper is rather a difficult matter and may be partly accomplished by grounding the printing machine and to have wires either dragging on the sheet of paper or passing as closely to the paper as possible, these wires, of course, being connected with the metal parts of the machine.

There is an additional way often used on printing presses which consists of an electrical attachment operating through an A. C. source of electricity. These are in use in the Government Printing Office and it suggested that an inquiry be made at the Government Printing Office to find out what is the name of their particular make of apparatus.

The Chapman Electric Neutralizer Co., Portland, Maine, and the Thompson Static Neutralizer Co., 1645 Old Colony Bldg., Chicago, Ill. are manufacturers of devices to remove static electricity from paper.

Another method of overcoming the difficulty of static charges is to keep the press room at 65 or 70 per cent. relative humidity and to condition the paper at this humidity before running over the presses. Most printing press rooms are down to about 20 or 25 per cent. relative humidity and, therefore, very susceptible to any static charges in the sheet.

A New Source of Soapstone In Ontario

H. S. SPENCE, M. E.

What shows promise of proving an important and valuable source of soapstone has lately been investigated by the Mines Branch of the Department of Mines, Ottawa. Mr. H. S. Spence, who is at present engaged in preparing a report on the talc and soapstone resources of Canada, for publication by the Mines Branch, examined the deposit in question last October. Mr. Spence's report reads, in part, as follows:—

Location

An interesting and extensive deposit of so-called soapstone occurs one mile west of Wabigoon station, on the main line of the Canadian Pacific railway, near Dryden, Ontario. The occurrence is close to Wabigoon lake, in the township of Zealand, and is distant only 500 yards from the railroad. It is well situated for working, the outcrops being on the top of a low ridge, thus affording good drainage for quarry operations. The mining location is numbered HW133, and the deposit is owned by Dr. E. Pidgeon, Wabigoon, Ontario.

Outside of a small amount of stripping, no development work has as yet been conducted on the property. There is very little overburden, however, and the outcrops are sufficient to show the existence of a large body of soapstone.

Description of Stone

The stone may be termed soapstone; though, beyond being soft enough to be cut readily with an ordinary saw, it possesses few of the outward characteristics of what is usually classed as soapstone. It yields a greenish-grey powder that possesses little slip, and the stone in not greasy to the touch, as is talc.

Tests of Stone

The following tests of samples of stone from the northern band were conducted in the Mines Branch laboratory.

Crushing strength. Three tests of crushing strength, made on 2 in. cubes, showed:

(1) 12,140 pounds per sq. in.
(2) 10,269 pounds per sq. in.
(3) 10,755 pounds per sq. in.

Tranverse strength. Two tests were made to determine the tranverse strength. The test pieces measured one inch in thickness by two inches wide; the supports were four inches apart. The modulus of rupture was determined as:

(1) 1827 pounds per sq. in.
(2) 1920 pounds per sq. in.

Corrosion. A sample of the stone, exposed to ordinary room temperature for three months, was weighed and then dried for two weeks at 105°C. On reweighing, there was no loss in weight, indicating no absorbed moisture. The sample was then immersed in concentrated hydrochloric acid and boiled for 48 hours. After thorough washing, by boiling in water for several days, the sample was dried at 105°C. and weighed. The loss in weight was found to be 9.74 per cent. On immersion in the acid, slight effervescence was noticed, indicating the presence of a carbonate. The sample after treatment showed only slight local pitting. A sample of the alberene stone, subjected to the same treament, effervesced violently when placed in the acid, and afterwards exhibited extensive pitting; the loss of weight in this case was 17.95 per cent, or almost twice that of the Wabigoon stone. Analysis, also, shows the presence in the alberene stone of almost twice as much carbon dioxide as in the Wabigoon stone.

Absorption. A sample of the stone was dried at 70 C. for 24 hours, weighed and immersed in cold, distilled water for three days. After air-drying for a short time, the sample was weighed and was found to have gained only 0.12 per cent.

Fusion temperature. Two samples were treated for their fusion temperature, which was determined in both cases as 1400°C. A sample of alberene stone, tested at the same time, went down at 1350°C.

It should be noted that all of the above tests and analyses of the Wabigoon stone were conducted on material taken from within a few inches of the surface of the deposit. This material, as shown by the broken test pieces, is traversed by numerous flaws and cracks showing rusty surfaces, and is likely to be considerably inferior in all respects to fresh, unweathered stone.

The stone is very similar in appearance and in composition (as shown by analysis) to the so-called "alberene stone" that is quarried on a large scale in Nelson and Albermarle counties, Virginia, and which is commonly classed as a soapstone.

The Wabigoon stone is a dark, greenish-grey rock, composed largely of talc, with some chlorite and dolomite. It is soft enough to be scratched with the nail. The rock is fine to medium-grained, the largest constituents being dolomite crystal that occur as phenocrysts up to ⅛ in. diameter. There is no approach to soapstone structure, the grain being quite uniform and the rock massive and homogeneous in every respect.

Analyses

The following analyses were made in the Mines Branch laboratory of the stone composing the northern band, and of the 18 inch band of soft soapstone bordering it. An analysis of a sample of Virginia alberene stone is shown for comparison. The analyses show that the Wabigoon stone contains considerably less carbonates than the alberene stone.

	1	2	3
Silica	41.94	51.44	37.10
Ferrous oxide	7.71	7.24	6.58
Ferric oxide	2.05	3.68	4.57
Alumina	7.57	4.79	4.53
Lime	3.42	None	4.20
Magnesia	25.39	26.43	27.37
Carbon dioxide	5.09	0.11	10.45
Water above 105°C.	6.71	6.56	5.46
Total:	99.88	100.25	100.26

1. Wabigoon stone, representative material of northern band.
2. Wabigoon stone, 18 inch band of soapstone bordering northern band.
3. Virginia alberene stone.

Description of Deposit. Two well defined bands of soapstone occur, separated by about 100 feet of hard grit rock, the nature of which has not been determined. The trend of the band is NW, and the apparent dip is approximately vertical. The stone is well exposed on the summit and west slope of a low ridge that crosses a small peninsula extending from the north shore of Wabigoon lake. The northern band has a proved length of over 500 feet, with a width of 35 feet. The extent of the southern band has not been determined, but from the visible outcrops, it is probably considerably the larger of the two bodies. There is very little overburden on the deposit and only a light stand of second growth timber.

The northern band has been stripped for a short distance of the light cover of soil that lies against its southern contact, but no openings have been made upon it. No work whatever has been done on the southern band. The northern band consists of about 35 feet of medium-grained stone, bordered along each contact by 18 inches of fine-grained, compact, soft soapstone. This soapstone is of good quality, is much more greasy to the touch than the stone of the main body, and consists largely of talc. Its occurrence is confined to the narrow bands along the contacts, and there is accordingly relatively little of it.

Small veinlets and pocketty aggregates of green, foliated talc occur locally in the mass of the main soapstone bands, but such material would not appear to be present in any quantity.

Possible Uses

The use that suggests itself most strongly for the stone of this deposit is for bricks for lining the smelting furnaces of sulphate pulp (kraft) mills. These furnaces require a refractory of material that is structurally strong and that does not spall or crack under the heat to which it is subjected. There are more than a dozen sulphate pulp mills in Canada, and aggregate amount of soapstone bricks used is considerable. All of these bricks are imported from the United States. If the Wabigoon stone proves suitable under actual working conditions for the above purpose, the cost of soapstone to domestic pulp mills should be materially lessened.

A further suggested use for this stone is for bake oven bricks. Soapstone-bricks are superior to ordinary fire brick for bake ovens on account of their greater heat retention, but their use is limited owing to the difficulty of procuring soapstone and its high cost.

Wabigoon stone might also be suitable for fireless cooker stones, foot warmers, griddles, etc.

Conclusions

This deposit is the most promising, from an economic standpoint of any of the soapstone occurrences see in Canada. There is undoubtedly a large tonnage of stone available; the deposit lies within a few yards of the railroad; and the location could not be bettered for a quarry site.

SALESMEN'S ASSOCIATION ADOPT PRAYER

The New York members of the Salesmen's Association of the Paper Industry are not satisfied with the possession of a Chaplain, talented though Dr. Craig Stewart, the official clergyman of the Association is. At their monthly luncheon at the Arkwright Club, with the biggest attendance yet held, they adopted a prayer which they will recommend to the entire Association for adoption. Here it is, under the title of "A Business Man's Prayer":

> Teach me that sixty minutes makes one hour; sixteen ounces one pound, and one hundred cents one dollar.
>
> Help me to live so that I can lie down at night with a clear conscience, without a gun under my pillow, and unhaunted by the faces of those to whom I have brought pain. Grant that I may earn my meal ticket on the square and that, in earning it, I may not stick the gaff in where it does not belong.
>
> Deafen me to the jingle of tainted money and to the rustle of unholy skirts. Blind me to the faults of the other fellows, but reveal to me my own. Guide me so that each night when I look across the dinner table at my wife who has been a blessing to me, I shall have nothing to conceal. Keep me young enough to laugh with my children.
>
> And when come the smell of flowers, the tread of soft steps, and the crunching of wheels out in front, make the ceremony short and the epitaph simple.

BEAVER BOARD COMPANIES REORGANIZED

The re-organization of the Beaver Board companies and subsidiaries has been successfully completed. Announcement was made by the re-organization committee that the plan had been formally declared effective after approval by the banks with which the company did business, and with holders of substantially all of its outstanding securities. The reorganized company is now in position to continue the business formerly carried on by the Beaver Board companies. Under the plan adopted there will hereafter be two companies. The present styled Beaver Board Companies will continue as the holding concern, and a new company, the Beaver Products Company Inc., has been incorporated under the laws of New York, and is to be the operating company under the reorganization plan. The latter has sold to the Central Trust Company of Illinois, Federal Securities Corporation and Hambleton & Company, $2,000,000 of its twenty-year 7½ per cent. sinking fund gold bonds, to be secured by first and refunding mortgage on the fixed assets of the company, the net value of which is about $14,000,000. The company will have a surplus of about $16,600,000. The mortgages will provide for the retirement of the entire issue at 110 and interest. The Beaver Board Companies is to issue eleven-year 8 per cent collateral trust gold notes limited to $5,000,000. About $3,150,000 of this amount will be issued in exchange at par for the present 8 per cent twelve-year gold notes of the company, dated Jan. 1, 1921, and the entire capital stock of the Beaver Products Company, Inc., with a net book value of $16,500,000 will be pledged as collateral for the new notes. The capitalization of the Beaver Board Companies as reorganized will consist of preferred stock not to exceed $10,000,000 and 225,000 shares of common stock. It is announced that the delivery of the new securities and various payments to be made under the new plan will be made on or about July 1. B. L. Worden, who founded and built up the Lackawana Bridge Company, will be president of both companies. W. W. F. MacGlashan will be chairman of the board of the Beaver Board Companies, J. H. Anderson will be Vice-President of the Beaver Products Company, Inc., John A. Logan and William E. Shearer will be vice-presidents. The company's Canadian properties will be consolidated as a Canadian corporation or Canadian corporations, the voting stock of which will be controlled by Beaver Products.

Numerous requests for reservations at Atlantic City hotels during the coming meeting of the National Association of Corrugated and Fibre Box Manufacturers are reaching Secretary-Treasurer B. C. Tamlin. The convention this year is to be held July 18, 19 and 20 at the Traymore Hotel.

Text Books Reviewed by Bryant

The following comments on Volume 3 of the textbooks in the Manufacture of Pulp and Paper have been received from O. F. Bryant, chairman of the Technical Section of the Pulp and Paper association and chief chemist for the Laurentide Co. He has had a wide mill, laboratory, and teaching experience.

With very few exceptions there have been no really up-to-date books on the manufacture of pulp and paper. Within the past two years at least two new books have appeared which have been decided additions to the literature on the art. These books have dealt more or less fully with certain phases of the manufacture of pulp and paper but as it is impossible for one man to be expert in every phase of the industry so it is impossible for one author to write a complete text on pulp and paper making.

This fact has been realized in the preparation of Vol. 3 of "The Manufacture of Pulp and Paper" and the Editor and the Joint Committee on Vocational Education have wisely followed the policy of having each process written by a man thoroughly conversant with the particular phase with which he was dealing. The result has been an up-to-date, minute and reliable text book.

The book is divided into nine sections, each section dealing with a separate and distinct phase of the manufacture of wood pulp. Each section has been written by a man well known in the pulp and paper industry and recognized as an authority on his subject.

The first section is very fittingly devoted to "The Properties of Wood". It is divided in two parts, the first dealing with the "Structural, Microscopical and Physical Properties of Wood" and the second covering the "Chemical Properties of Wood".

Part 1 was written by Mr. H. N. Lee, formerly in charge of the Division of Timber Physics of the Forest Products Laboratories of Canada. Mr. Lee is a well-known authority on wood structure. The section is well written, very clear in its descriptions and profusely illustrated. The photomicrographs in this section are of the finest that have appeared in any publication. The text contains a wealth of data compiled from many sources on the structure of wood, fibre lengths of various species, specific gravity, etc. For the benefit of those wishing to go more thoroughly into the subject a very valuable bibliography has been appended.

Part 2 was written by Mr. J. N. Stephenson, the Editor of the Textbooks, and Mr. R. W. Hovey, formerly in charge of the Division of Pulp and Paper of the Forest Products Laboratories of Canada. In this section, the chemistry of wood is treated in sufficient detail for the reader to obtain a good general knowledge of the subject. Tables giving the general properties of various woods are included. A good bibliography and a glossary accompany this section.

The "Preparation of Pulpwood" is the subject of the third section. This section, prepared by Mr. S. Roy Turner, covers the treatment of the wood from the time it reaches the mill until it is in shape to be turned over to the groundwood mill or the chemical pulp plant. Descriptions of the apparatus used in the cut-up mill and the wood room, such as slashers, conveyors, barking drums, bark presses, barkers, chippers, crushers, re-chippers and chip screens are given. This section is very well written and the descriptions and cuts of apparatus are exceedingly clear.

Section 3, dealing with the "Manufacture of Mechanical Pulp" was written by a man well versed in the subject, Mr. H. J. Buncke of the Abitibi Power & Paper Co. Mr. Buncke has covered the ground very thoroughly. After giving a general description of the process he proceeds to describe various types of grinders used, methods of producing different grades of pulp and the qualities that the various grades of pulp possess. Considerable space is also devoted to the treatment of grindstones. The layout of a complete pulp mill is shown and described and the correct operation of such a mill discussed. The cuts in this section are excellent and particularly suited to fit the text. One or two of the cuts have suffered from over-much reduction but these cuts are so clear that the details can be brought out with an ordinary reading glass.

The section dealing with the "Manufacture of Sulphite Pulp," Section 4, was prepared by Dr. Bjarne Johnsen whose wide experience in various mills and intimate knowledge of the chemistry of wood and of the pulp processes has enabled him to make this section one of the best in the book. He describes, briefly, the history of the process and takes up the preparation of the cooking acid with a complete discussion of the various types of apparatus employed. The cooking process next receives attention. Here, besides complete descriptions of digesters, fittings, pressure regulators, etc., the routine of a typical cooking operation is discussed. The section is profusely illustrated and is one of the most valuable and interesting in the book and a distinct addition to the literature on the sulphite cooking process.

The "Manufacture of Soda Pulp," by Arthur B. Larchar is dealt with in Section 5. A very clear description of the method of preparing the cooking liquor is first taken up and various methods of separating the caustic liquor from the lime mud are discussed at some length. The cooking process is then explained and under this heading descriptions of digesters, blow pits, etc. are given, together with a very clear outline of the cooking operations. The washing of the pulp and evaporation of the black liquor next receives attention and here is found a very good description of multiple effect evaporation. Burning and leaching of the black ash is then described. This section contains many illustrations, several tables and much valuable data on the process.

Section 6, "Manufacture of Sulphate Pulp," by Karl M. Thorsen is another outstanding feature in this book. It is clear and concise and a very valuable piece of work. After discussing the object of the process, the wood used, size of chips, character of fibre etc. the author takes up the preparation of the cooking liquor. Here the causticizing process, the effect of the chemicals in the liquor and the removal and disposal of the sludge are described. The cooking process is then dealt with in a very comprehensive manner. The operations in the diffuser room next receive attention and a very clear and complete description of a diffuser and its operation is given. Next, various types of evaporators are discussed and the principles of evaporation are dealt with. A comprehensive description of the operations in the furnace room and the apparatus employed completes the description of the process. An appendix dealing with methods of analysis and the reclamation of by-products brings this section to an end. Like the other sections, this one contains a large number of cuts of apparatus etc. as well as a large amount of valuable data.

Section 7 deals with the Treatment of Pulp . This portion of the book was written by Mr. J. O. Mason of the Laurentide Company, Limited. This section takes up the methods of screening all kinds of wood pulp and contains excellent cuts and descriptions of the various types of apparatus employed. The slushing or deckering of stock is next described and methods of regulating consistency are explained. Very good descriptions of wet machines, save-alls, hydraulic presses and drying machines, with excellent cuts illustrating the principles involved are also given in this section. This portion of the text, like the section on groundwood, has suffered somewhat from too great a reduction of the cuts.

Section 8 on the ''Refining and Testing of Pulp'' is divided into two parts. Part 1, dealing with the ''Refining of Pulp,'' was written by Mr. T. E. Kloss; Part 2, taking up the ''Testing of Pulp'' was prepared by Max Kline.

Various types of refiners such as the ball mill, the disc refiner, the kollergang, the stone roll beater and the jordan are very clearly described with suitable cuts in Part 1.

Part 2 takes up the standard methods adopted in Canada and the United States for sampling and determining the moisture in pulp, the examination of fibres, the sedimentation test and methods of testing the strength and color of pulp. Chemical tests such as bleach consumption, ash, resin and oxy-cellulose determinations and the resistant cellulose test are described in detail.

Section 9, ''Bleaching of Pulp,'' by H. H. Hanson, begins with the chemistry of bleach liquor and the manufacture of bleaching powder and electrolytic bleach. The preparation of the bleach liquor and the bleaching operation, with full descriptions of the apparatus employed, are then taken up. There follow complete directions for carrying out the analysis of bleaching powder and bleach liquor.

A carefully prepared and complete index covering the whole volume has been prepared and this greatly enhances its value for reference purposes.

Vol. 3 of ''The Manufacture of Pulp and Paper'' has been awaited with more than ordinary interest, as it is the first book of the series dealing directly with the manufacturing processes. It has been some time in appearing, but now that it is here we feel that it has been worth waiting for. It can be truly said that it is the best book available on the manufacture of wood pulp.

EXPORTS OF PAPER AND PULP FROM FINLAND

From U. S. Consul Leslie A. Davis, Helsingfors, April 24.

The exports of paper from Finland in March were twice as great as for February, amounting to 19,377 tons, which brings the total exports of paper during the first three months of this year up to 40,677 tons. The greater part of this was newsprint. The severe winter continued to hamper shipping, as foreign ships were unable to come after goods previously sold. The exports would probably have been about 5,000 tons greater had the ice not formed an obstacle. The amount of paper exported in March, 1921, was 6,759 tons, and the total for the first quarter of 1921 was 20,268 tons.

The situation in the paper industries is considered satisfactory, the demand in Finland and abroad having greatly increased as compared with last spring. Most of the recent exports have gone to Russia and England, although small quantities have gone to France.

Prices are about the same as a year ago. Some varieties of paper have changed in price, however, due to the fluctuations in the prices of certain chemicals needed in their manufacture.

There are good prospects for continued production. Stocks both abroad and in Finland are small, and the sales which have been made have been short-period ones, due naturally to the critical financial conditions. It is thought that the demand will be still greater in the fall.

Increased Exports of Cardboard

The export of cardboard shows a decided increase in quantity in comparison with last year, but the prices have remained about the same. The exports during March amounted to 1,464 tons, and those during the first quarter of the year to 3,652 tons. The corresponding figures for 1920 were 506 and 1,804 tons, respectively.

Exports of groundwood continue to be small, amounting to only 1,413 tons of dry pulp in March and 6,498 tons during the first quarter of the year. No wet pulp has been exported this year. The corresponding figures for 1921 were 380 and 2,458 tons, respectively.

The markets have continued dull, and prices have further decreased, the present prices being about 50 per cent lower than those in December. One of the principal factors tending to decrease prices of groundwood has been the appearance of the Canadian product on the European markets. Formerly Canada sold its groundwood in the United States, while the Scandivanian countries and Finland sold to England and France. The reverse is now the case. The Scandinavian countries at present are selling chiefly to the United States.

Trading circles hold the opinion that the groundwood markets will improve in the near future, as stocks already purchased have been consumed, and it is thought that the users of this article will buy for transportation during next open water. It is also thought that increased demand will increase prices. The inland trade also has improved, the sales so far this year amounting to from 4,000 to 5,000 tons.

Finnish Trade in Chemical Wood Pulp

The total exports of chemical wood pulp in March amounted to 13,265 tons—twice as much as in February. Of this quantity, 10,292 tons were sulphite and 2,973 tons sulphate. The total quantities of chemical pulp exported in the first quarter of 1922 amounted to 25,298 tons, of which 19,551 tons were sulphite and 5,747 tons were sulphate. The exports during the corresponding period last year were considerably smaller, amounting to only 12,026 tons, of which 10,324 tons were sulphite and 1,702 tons were sulphate.

Ice conditions have also hampered shipments of chemical pulp. Two American ships, which were to load 6,000 tons of cellulose at Hango, had to remain in Reval, Esthonia. It is likely that April figures for exports of chemical pulp will be greater than the March figures.

The decrease in prices, which began at the first of the year, continued in March. This was due largely to competition in the European markets from the other Scandinavian countries and Canada.

The demand for chemical pulp has been brisk in the United States, to which country Finland sends most of its product. The demand from England has been slight. Japan is a new market for this article, and considerable sales were made to that country the latter part of last year. So far the sales have been effected through German and Scandinavian intermediaries, but it is expected to establish direct connections with that country.—Commerce Reports.

FEDERAL TRADE COMMISSION REPORT ON NEWSPRINT

The average production of total newsprint and standard news, based upon the total combined production for the years 1917 to 1921, inclusive, amounted to 114,440 tons of total newsprint and 103,688 tons of standard news, for a period corresponding to May. The actual production for May, 1922, amounted to 129,950 tons of total newsprint and 120,654 tons of standard news, which, for total newsprint was 14 per cent above the average for the five-year-period and for standard news 16 per cent above the average.

The production of newsprint for May, 1922, compared with May, 1921, shows an increase, amounting to about 65 per cent for both total newsprint and standard news.

The production for May, 1922, compared with May, 1920, shows an increase of 1 per cent. for both total newsprint and standard news.

The production for May, 1922, compared with May, 1919, shows an increase of 23 per cent for total newsprint and 25 per cent. for standard news.

The production for May, 1922, compared with May, 1918, shows an increase of 17 per cent. for total newsprint and 28 per cent for standard news.

Mill stocks of both total newsprint and standard news decreased during May, 1922.

The imports of newsprint for April, 1922, were 12,591 tons more than for April, 1921. Of this, Canada's increase was about 11,000 tons, Germany 1,100, and Finland 1,700 tons—each about 100 per cent. increase. Imports from Sweden fell off a little. The exports for April, 1922, were 2,067 tons more than for April, 1921.

Publishers' stocks decreased 1,200 tons during the month. Average daily tonnage used during May was 265 tons less than the average used in April.

Publishers' stocks and transit tonnage on May 31st represented 34 days supply at the existing rate of consumption.

Publishers' and Jobbers' total stocks and tonnage in transit on May 31st aggregated 191,657 tons.

The domestic consumption of standard news by metropolitan dailies using between one-half and three-fourths of a million tons annually, for May 1922, when compared with May, 1921, shows an increase of 14 per cent. and an increase of 20 per cent. when compared with May, 1920.

The above metropolitan dailies held 58 per cent. of the tonnage on hand at the end of the month.

The weighted average price of contract deliveries from domestic mills to publishers during May, 1922, f.o.b. mill, in carload lots, for standard news in rolls was $3.541 per 100 pounds. This weighted average is based upon May deliveries of about 47,000 tons on contracts involving a total tonnage of approximately 534,000 tons of undelivered paper manufactured in the United States.

The weighted average contract prices based on deliveries from Canadian mills of about 24,000 tons off standard roll news in carload lots, f.o.b. mill, in May, 1922, was $3.501 per 100 pounds. This weighted average is based upon the May deliveries on contracts involving about 222,000 tons of undelivered Canadian paper.

The weighted average market price for May, of Standard roll news in carload lots f.o.b. mill, based upon domestic purchases totalling about 10,000 tons, was $3.548 per 100 pounds.

PULP STOCKS INCREASE IN U. S.

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their average daily production based on the reports covering the years 1917, 1921, inclusive, the figures of the Federal Trade Commission show that:

Ground Wood pulp stocks equal 40 days' average output, a considerable increase during the month.

News grade sulphite mill stocks equal 9 days average output, a decrease.

Bleached sulphite mill stocks equal 6 days' average output, a slight increase.

Easy Bleaching sulphite mill stocks equal 7 days' average output, an increase.

Mitscherlich sulphite mill stocks equal 9 days' average output, a large decrease.

Sulphite mill stocks equal 14 days' average output, a slight decrease.

Soda pulp mill stocks equal 7 days' average output, a large decrease.

Mill stocks of "other than wood pulp" equal 3 days' average output, a decrease.

Total mill stocks of all grades equal 21 days' average output the tonnage on hand is 20,000 tons greater than at April 30, but this increase is less than the increase in stocks of groundwood by 3,000 tons.

The amount of time lost during May shows a very satisfactory decrease.

The tonnage of groundwood imports doubled in April 1922 over April 1921 while imports of chemical pulp were nearly 4 times as great. The largest percentage increase was in bleached sulphite.

U. S. Imports More Paper For Less Money

Stocks of book, wrapping, fine, tissue, and hanging according to the Federal Trade Commission, increased during the months, of May. Stocks of all grades reported by manufacturers at the end of May amounted to 289,932 ton, including the stocks at terminal and delivery points. In addition to these stocks, jobbers and publishers reported newsprint stocks and tonnage in transit aggregating 191,657 tons.

Comparing the stocks on hand at the domestic mills on May 31, with their average daily production, based upon the combined production for 1918 to 1921, inclusive, the figures show that:

Newsprint paper mill stocks equal 6 days' average output.

Book paper mill stocks equal 13 days' avrage output.

Paper Board mill stocks equal 10 days' average output.

Wrapping paper mill stocks equal 30 days' average output.

Bag paper mill stocks equal 6 days' average output.

Fine paper mill stocks equal 35 days' average output.

Tissue paper mill stocks equal 19 days' average output.

Hanging paper mill stocks equal 22 days' average output.

Felts and building paper mill stocks equal 11 days' average output.

Miscellaneous paper mill stocks equal 24 days' average output.

Total paper mill stocks of all grades equal about 14 days' average output.

The value of imports of paper for April 1922 was $5,717,861 compared with $7,859,571 for April 1921, but the amounts in tons were distinctly larger for newsprint and book paper and decidedly smaller for wrapping. The value of exports was $1,773,157 in April 1922 and $1,894,619 in April 1921.

OLD ROPE AND BAGGING.—Dealers in New York continue to quote 6 cents per pound f.o.b. New York for No. 1 manilla rope and report having little difficulty in securing mill orders at this price basis. Demand for old rope is active and it must be said available supplies appear to be light. Old bagging is quiet and moving only in routine quantities.

BRITISH TRADE TURNING CORNER

(From Our London Correspondent)

London, June 27, 1922.— There is a temporary briskness in British paper and pulp circles, and mill-owners feel they are getting round the corner in the direction of a brighter outlook. " We must not crow yet, as we are not out of the wood," said one to me this week. "The past losses and bad trade have to wiped out and made up for." If the home trade was doing as well as the export at present, sellers would feel more happy.

A little sequel to the Australian preference for British paper was revealed the other day. Aberdeen sellers have played no small part in securing the preference and the other day the steamer "Gabriella" sailed out of the harbor for Sydney with 1,400 tons of newsprint. The paper was made at the Donside Paper Co. Ltd., and though I have not the information definitely, I may assume that Canadian pulp was largely used in making the shipment for the Australians. So it is "Empire product" and this is the first big shipment of paper direct from Aberdeen to Australia. New Zealand and Australian sellers are now visiting London with a view to obtaining the representation of British mills in the Antipodes.

Wiggins, Teape & Co.

I have the Directors' report from Wiggins, Teape & Co (1919) Ltd., before me and it gives a slight insight into some of the difficulties that had to be faced. The Directors regret the results of the company are so meagre, but they are glad to report a balance on the right side. The preference dividend has been paid, but no distribution is recommended on the ordinary shares which for 1920 received 5 p.c. A claim has been made against the Government in respect of the fall in stock values and the Directors anticipate when the figures have been fully settled with the Inland Revenue that there will be a substantial surplus to be added to the amount carried forward. The report adds: "The new photographic base paper mill was not completed until late in 1921, and it was not until early this year that production began on a commercial scale. In spite of the trade depression, however, the number of orders received and the customers on the books have increased."

This report is typical of what many of the British mills have endured, between Government taxation on one side and depression in trade on the other.

Pulp Imports

Imports of groundwood (moist) in May more than doubled those of April. The total shipments were 58,364 tons from all sources, compared with 24,328 tons in April and 22,215 tons in May, 1921. It is certainly good news for the pulp mills.

The countries supplying were as follows:—From Canada, 3,536 tons (13,536 tons in May, 1921); Sweden, 8,590 tons (nil); Norway, 45,914 tons (8,518 tons); other countries 324 tons (nil). It will be noticed that Norway landed good supplies during the month.

For the five months, January—May, the total shipments reached 141,224 tons, compared with 109,391 tons in 1921.

Bleached sulphite was imported to the extent of 980 tons in May, a reduction of 17 tons on April, compared with 357 tons received from Norway and Canada in 1921. The five months' supplies are only 6,433 tons, an increase of 1,278 over 1921.

Unbleached sulphite was received as follows:—From Finland 6,764 tons (10 tons in May, 1921); Sweden, 9,911 tons (9,181 tons); Norway, 9,115 tons (2,996 tons); Germany, 392 tons (3,554 tons); Canada and other countries 95 tons (1,597 tons). Total 26,277 tons, compared with 17,338 tons in May, 1921 and for the five months 73,641 tons compared with 51,945 tons for the corresponding months of 1921.

Prices for groundwood are quoted on a higher level in London. A good many contracts have recently been entered into.

Paper Exports

The exports of paper, boards, etc. rose to 154,649 cwts —the highest for the year—compared with 138,174 cwts in April, and 74,334 cwts. in May last year. Last month's figures denote a change for the better and the improvement was reflected in the pulp market. In printing paper and newsprint shipments to overseas markets, the increase is considerable, 100,811 cwts. for May, which is about one-third of five months' shipments, and a remarkable feature of the figures is the increased supplies for Canada. Last year the Dominion bought about 2 tons of printing paper and last month no less than 61 tons left for Canadian buyers. Australia took 2,272½ tons of newsprint in May; in May last year the shipments were only 44½ tons.

Exports of the British mills have more than doubled last year's shipments, which is a good sign. Gradually and slowly the rise is recorded and with the depressed conditions abroad it is interesting to record that such a state of things should exist.

Paper makers are now enquiring for sulphite, easy bleaching, etc., and prices are on the upward grade—outside contracts, of course.

Imports

In the imports Canada is now in the newsprint list, but Newfoundland has shipped 4,419½ tons in 5 months. The supplies from Canada are only 10½ tons in May—the first for the year.

Imports from all countries reached 895, 156 cwts, compared with 708,822 cwts in April, and 477,196 cwts in May 1921.

Large supplies of boards have arrived from Canada. Another noticeable feature of the imports is the large and increased supplies from Germany, Finland, and Austria who have of course, robbed Canada of the trade in the British market.

The great engineering dispute in the United Kingdom has been settled and once again peace reigns supreme, except for the unsettled feeling amongst the printers. The engineers have held up a lot of work, principally repair work, and some of the mills had difficulty in getting orders executed. However, everything is working smoothly again.

Losing Orders

Mr. Thomas Tait, papermaker, contributes an interesting letter to the newspapers showing how orders for Brittish paper-makers are lost. He directs attention to the ruinous competition which is being met with from Continental countries with low rates of exchange and states that he was given an opportunity some time ago to quote for several days' work, and as he was anxious to keep his papermaking machinery running over the whitsuntide holidays be put in a very keen price, which apparently was something around 8 cents a lb. In spite of his endeavors to quote as low as possible be found later that the order had gone to Austria at 5¼cents per lb. delivered to a Scottish port.

Continental Paper

According to advices from Sweden the market there shows a good demand for kraft, wrapping papers and newsprint—with prices showing a stiffening tendency. Orders for other classes of papers are dull.

German reports show that prices have been increased in the "Fatherland" and newspapers state that 5 per cent of their selling price goes to the paper manufacturer. Lately the German have had a good run of orders and they add that trade is not slow.

The Paper Industry

To give an accurate review of the conditions prevailing at present in the British paper mills would mean going round each concern separately and gauging what things were like. All the mills are not alike in the matter of orders, but it is safe to say that the British paper mill owner is making a desperate attempt to get trade going in a desperate world. He is up against obstacles that few people can realise.

Papermakers in England are not living in a fool's paradise; they are living and working in a market which is economically cut down to the barest minimum and then the wily Teuton or Austrian will step in with a depreciated rate of exchange and carry away the plums to the foreign mills, How many Canadians today would like to endure the social elements of a Government system which compelled them after paying the wages sheet to pay out in stamps, (affixed to a card), 14 cents each week for every employee under a wage of $25. a week. That is part of a government system to help the worker when unemployed and sick. And periodically an Inspector from the Government will step into the mill office and ask the cashier to produce the cards so that he may see the stamps are properly and religiously affixed. Calculate what 14 cents a week means where there are over 1,000 workers and find out the total for the year and the orders it equals. When all is said and done it is remarkable how the British papermaker can keep himself in a state of solvency.

With so many nations competing in a market and with so much dumped and cheap paper in the market from foreign mills — which have been running for the sake of running — a paper maker, or his seller, must have a lynx eye to foresee " what the other fellow is doing." That is the postion in England today. Export is the only hope and the only salvation of the mills. Yet, some of the big concerns pay dividends. How they make them suggests the discovery af Aladdin's lamp.

30,000 TONS OF PULP BURNED

A most unfortunate fire occured early this week at Port Alfred, Que., probably causing the greatest single loss of wood pulp. A pile containing 30,000 tons of mechanical pulp awaiting transportation to England and other countries caught fire on Sunday. Most of the buildings near by were saved but the loss of pulp will amount to very nearly $1,000,000. It was well insured, but pulp that is burned will never make paper, nor pay freight. Two steamers were in port, ready to load the pulp for England and France.

Fortunately the Chicoutimi Pulp Co., which suffered the loss has several thousand tons in storage at their mills and can maintain shipments. The sulphite mill of the Ha! Ha! Bay Sulphite Co. was not damaged, and 22,000 tons of sulphite pulp escaped the flames.

IRELAND'S PULP AND PAPER IMPORTS

The imports of pulp into Ireland in 1920 were about 20,000 tons valued at £821,800. Of this amount Belfast took 2,700 tons, Dublin 6,200 tons, and Larne 10,000 tons. Nearly the whole of this quantity was imported directly, Sweden supplying 5,600 tons, Norway 7,700, Canada 2,700, Germany 1,400, and Russia 700 tons.

The total imports of paper were 823,700 cwt. valued at £2,334,000. Of this amount 319,200 cwt. entered at Belfast, 432,200 at Dublin, 32,600 at Cork, and 39,600 cwt. at other ports.

The tables showing the direct imports—that is, from countries other than Great Britain—show two classes which are described as "packing" and "printing." Considering the former, the direct imports were 80,400 cwt. (valued at £241,100), of which Sweden supplied 52,800 cwt., Germany 13,500, Belgium 5,100, and other countries 8,800 cwt. The direct imports of the latter were 107,100 cwt. valued at £258,500, of which Sweden exported 61,500 cwt., Canada 28,400, Germany 16,000, and other countries 1,100 cwt.

The total imports of cardboard were 6,600 cwt. (valued at £36,700), of which 2,400 cwt. entered at Belfast, 2,600 at Dublin, 473 at Cork, and 571 cwt. at other ports. The direct imports were 13,000 cwt. valued at £24,100, of which Sweden supplied 13,000 cwt. and other countries 448 cwt.

The total imports of millboards were 142,000 cwt. valued at £305,600, of which 102,300 cwt. entered at Belfast, 37,800 at Dublin, 1,600 at Cork, and 300 cwt. at other ports. Of the direct imports amounting to 24,200 cwt. (valued at £43,300), Canada supplied 16,100 cwt., Norway 7,300, and other countries 800 cwt.

The total imports of strawboard were 10,800 cwt. (valued at £11,000), of which none entered either Belfast or Dublin; 1,100 cwt. entered at Cork, and the balance at other ports. The direct imports of this class cannot be reconciled with the total imports and are omitted.

There are seven paper manufacturers in Ireland—four in County Dublin and three in County Antrim. —Commercial Intelligence Bulletin.

WHEN PAPER IS WANTED

Details of the following inquiries can be had from the Department of Trade and Commerce, Ottawa referring by number.—

4921. *Paper.*—A Cork firm of paper merchants and distributors throughout Ireland would be glad to hear from manufacturers of kraft paper and all classes of wrapping paper, also all classes of news offcuts. They will lodge a credit in any bank in England and will pay cash on receipt of goods. Orders of 25 to 50 tons at a time.

4922. *Paper.*—A Belfast firm of wholesale stationers would like to see samples of Canadian kraft paper, newsprint, and writing paper.

4923. *Paper.*—A paper agent in Dublin wishes to get in touch with Canadian mills making newsprint. He says he can place large orders with the Dublin dailies and provincial newspapers. Cash against documents in each case.

4924. *Wallpaper.*—A Dublin firm who are understood to be the largest distributors of wallpaper in Ireland might be interested in the cheaper lines of Canadian wallpaper, which must be 22 inches wide.

There are two things about money that worry us: where it is going to and where it is coming from.

Technical Section

REVIEW OF RECENT LITERATURE

A.—Properties, Chemistry and Testing of Raw Materials and Finished Product.

A-3 The Use of "Rifatto" In the Manufacture of Paper Pulp. STEFANO DI PALMA. **Staz. Sper. Agrar. Ital.**, liii, 393-394, (1920); **Chem. Abs.**, xv, 3206, (Sept. 20, 1921). "Rifatto" is the woody residue remaining after the extraction of the juice from the roots of **Glycyrrhiza glabra** Lin. On treatment with dilute hydrochloric acid and washing with water, fine brownish fibers remain which are decolorized by the action of chloride of lime or the hypochlorites. Air-dried they have an ash content of 6 per cent., mostly carbonates, chlorides, sulphates, and phosphates of calcium, sodium and potassium, with silica and iron. Containing about 50 per cent. of crude cellulose it is well adapted for the preparation of paper pulp. -A. P. -C.

A-14 The Glarimeter—An Instrument for Measuring the Gloss of Paper. L. R. INGERSOLL. **J. Optical Soc. America**, v, 213-217, (1921); **Chem. Abs.**, xv, 3745, (Nov. 10, 1921). A new optical system for the earlier instrument is described. The gloss may be expressed directly in terms of the per cent of polarization or in terms of the readings of the circle in ordinary degrees which ever may be preferable. Ordinary magazine paper shows from 25 to 40°. -A. P. -C.

A-15 The Constitution of Cellulose and of Cellobiose A. D. VON EULER. **Chem. Ztg.**, xlv, 977-978,998, (1921); **J. Soc. Chem. Ind.**, xl, 764A, (Nov. 15, 1921). A structural formula for cellulose is advanced which is in agreement with its constitution as a high molecular condensation product and which may be reconciled with the properties of its derivatives and fission products. Two variations of the formula are proposed which contain the p-dioxan ring of Green's formula, but which have the advantage over the latter that they contain a chain of hexose molecules of any desired length. The author was not aware of the work of Haworth and Leitch on the constitution of cellobiose when this paper was written. -A. P. -C.

E.—Sulphite Manufacture and Equipment

E-1 Analysis of Reclaimed Cooking Acid for Sulphite Mills. GOSTA P. GENBERG, Nekoosa- Edwards Paper Co. **Paper Trade J.**, lxxiv, No. 15, 275, 277, (April 13, 1922); **Paper**, xxx, No. 7, 122-123, (April 19, 1922); **Paper Ind.**, iv, 83-85, (April 1922). The author recommends the following scheme of analysis. **Total SO_2.** Dilute 20 cc. of liquor to 500 cc.; measure out a convenient amount of the diluted solution out of a 50 cc. burette, add excess of sixteenth-normal iodine solution to light yellow coloration, and titrate back with the liquor in the burette. **Organic Matter.** Add 50cc. of concentrated hydrochloric acid to 50 cc. of liquor, evaporate to dryness, take up with 5 cc. of hydrochloric acid and 100 cc. of water, boil 10 minutes, filter hot, wash six times with hot water, dry at 105°C and weigh as organic matter. **Sulphur Trioxide.** Boil the filtrate from the determination of "organic matter" for 5 minutes, add 50 cc. of barium chloride solution, boil five minutes longer, allow to settle overnight, filter, wash, ignite and weigh. **Lime as Calcium Sulphate.** Multiply the amount of sulphur trioxide found by 0.7. **SO_2 and CaO combined as Calcium Monosulphite.** To 50 cc. of liquor add, drop by drop, with constant stirring, 15 cc. of 26 per cent. ammonia and allow to settle for 10 minutes. Filter, wash with three 25-cc. portions of 14 per cent. ammonia, wash the precipitate into a 500 cc. flask, add 5 cc. of concentrated hydrochloric acid, dilute to the mark, transfer to a burette and titrate against sixteenth-normal iodine as in the determination of total SO_2. SO_2 multiplied by 0.875 gives CaO combined as calcium monosulphite. **Free SO_2.** Substract the combined SO_2 from the total SO_2. **Total Lime.** The determinations of CaO combined with SO_2 and with SO_3 are checked by diluting 20 cc. of liquor to 200 cc., boiling with hydrochloric acid to drive off SO_2, and precipitating the lime as oxalate in the usual manner. Results of a series of tests are given, showing that the average error is + 2.3 and -1.8 per cent respectively. -A. P. -C.

E-1 Concerning the Analysis of Raw Sulphite Acid. RUDOLF SIEBER. Translation by Carl L. Fineman and W.E. Byron Baker in **Paper Trade J.**, lxxiv, No. 15, 277-283, (April 13, 1922); **Paper Ind.**, iv, 271-277, (May 1922); Also, translation by C. J. West in **Paper**, xxviii, No. 5, 24-27, (April 6, 1921). Results are given of a comparative investigation into the practical usefulness of old and new methods of analyzing sulphite liquors. Of the new methods Sander's, and of the old a modification of Hohn's, are practical, and these are recommended for the mill Laboratory and for the mill itself. -A. P. -C.

E-1 Determination of Sulphur Dioxide and Trioxide in Burner Gases. R. DIECKMANN. **Chem. Ztg.**, xlv, 885, (1921); **Chem. Abs.**, xvi, 37, (Jan. 10, 1922). E. Berl has claimed that the absorption of sulphur dioxide and trioxide in gas mixtures by caustic soda is uncertain and recommends the addition of stannous chloride to the absorbent. Values are given for 7 analyses which indicate that caustic soda alone is a satisfactory absorbent if the absorption takes place in the wash bottle recommended by Schilling. It is true, as Berl claimed, that the results are likely to be a little too low for sulphur dioxide and a little high for sulphur trioxide; but the average value of the per cent by volume of sulphur dioxide was only 7.96 when stannous chloride was used with the caustic soda and 7.87 when caustic soda alone was used. -A. P. -C.

E-2 Sulphur In Sulphite Waste Liquor. GEORGE BARSKY, Columbia Univ. **Paper Trade J.**, lxxiv, No. 15, 315-323, (April 13, 1922). An investigation into the form of combination of the sulphur in sulphite waste liquor. "Free SO_2" is the sum of the sulphurous acid, the bisulphite, and the sulphite (all expressed as SO_2). It is usually determined with standard iodine and starch indicator. The effect of dilution on the end point varies directly as the dilution, as it represents the amount of standard solution required for the titration of amounts of pure water. The amount of free SO_2 increases with the dilution at a decreasing rate, showing that there is present some very unstable form of combination of SO_2. The smallness of the increase shows that it is present in small amounts or that an equilibrium exists between the free and combined SO_2 and that the equilibrium conditions are satisfied by small concentrations of SO_2. Profound decomposition of SO_2-bearing substances occurs when waste liquor is heated to even a moderate temperature. For strictly concordant results the free SO_2 must be titrated at a low temperature, and preferably at the same temperature every time. This is most easily done by adding ice to the solution, the error of dilution thus caused being negligible. "Loosely combined SO_2" is that which is readily removed from the organic molecule by treating with alkali solution. For this determination, the mixture of liquor and alkali solution must be allowed to remain on the water bath at least ten minutes, to obtain concordant results. At room temperature, the reaction between liquor and alkali comes to a final equilibrium in about 10 minutes. When the temperature is raised to that of the water bath, an additional amount of SO_2 is split off, due to another reaction, not to a change in the equilibrium, equilibrium being reached in about 40 minutes. For every two molecules of SO_2 which can be removed at low temperatures, an additional molecule can be removed by heating on the water bath. By boiling sulphite waste liquor, a nearly constant SO_2 content is reached in about four hours. Of the loosely combined, one part is removed by boiling while two parts are unaffected. -A. P. -C.

E-2 Determination of Methanol (in Sulphite Spirits). KARL H. A. MELANDER. **Svensk Pappers-Tid.**, xxiv, 277-278, (1921); **Chem. Abs.**, xvi, 222, (Jan. 20, 1922). Place 22 grams of iodine and 5 cc. of the methyl alcohol solution containing about 2 per cent. of methyl alcohol in a Jena flask. Attach the flask to a condenser, then to a wash bottle containing a little red phosphorus in water at 50 degrees and supplied with a bulb to prevent suction, and finally to an absorption apparatus containing a few cc. of pyridine. Pass hydrogen through the apparatus slowly while the flask is heated to about 70° for half an hour. Then increase the heat, run warm water through the condenser and pass hydrogen rapidly for another half hour. Concentrate the pyridine solution on water bath, dissodve in water, add a few drops of sodium chromate solution, and titrate with decinormal silver nitrate. -A. P. -C.

E-2 Ethyl Alcohol from Sulphite Waste Liquor. H. BRAIDY. **Rev. Gén. Mat. Col.**, xxv, 65-70, 85-90, (1921); **Chem. Abs.**, xv, 3206, (Sept. 20, 1921). A study of the feasibility of producing ethyl alcohol from sulphite waste liquors. The general composition of the liquors, the procedures recmmended for their utilization, and the economic outlook offered by the operation of these procedures are discussed. Numerous references to the literature are given. -A. P. -C.

E-5 The Chemistry of the Sulphite Process. R. N. MILLER and W. H. SWANSON, Forest Products Lab., Madison, Wis. **Paper Trade J.**, lxxiv, No. 15, 295-305, (April 13, 1922); **Paper**, xxx, No. 7, 96-104, (April 19, 1922); **Paper Ind.**, iv, 257-261, (May 1922.) A series of experimental cooks were made under the same conditions and blown prematurely, and the pulp and liquor were examined at the end of each prematurely blown cook. The cooks were carried out in a 50 pound digester, on white spruce from Rib Lake, Wis., with acid having the following composition: total SO_2 3.80 per cent., free 2.40, combined 1.40. The chips were steamed with live steam for half an hour, the digester was filled with acid and allowed to stand overnight, and in the morning enough acid was added to make up for what had been absorbed by the chips. Indirect heating was used. The temperature was raised to 100 in 3 hours, to145 C. in 8.5 hours and held there to the end. The pressure was not allowed to exceed 65 pounds per square inch. Samples of liquor were drawn off and analyzed at the end of 4, 7, 9, 10, 11, 11.5, 12, 12.5, and 13.25 hours; and the contents of the relief receiver and gas tank were examined at the end of each cook. The true values for the concentration of SO_2 in its various forms of combination were obtained by taking the iodine titration as a measure of the total SO_2, the combined SO_2 by the Sander method as the measure of the combined SO_2, and the difference between them as the true free SO_2. A discussion of the analytical results obtained lead to the following conclusions. Under the conditions of cooking which were employed, the cooking was complete at or about the eleventh hour. The reaction involving the combination of base ceased at about the same time that the pulp was at its best. There is a loss in the total base present in the solution much greater than the small amount leaving the digester through the relief. The analytical data indicate that this is due to precipitation of the lime on the fiber, in part at least. The base unaccounted for is probably deposited on the heating coils or is lost in washing the pulp. The removal of the lignin had proceeded to a certain extent before the fourth hour and 110° had been reached, attained a considerable speed at temperatures but little above 100° and proceeded with vigor through all temperatures that are commonly thought of as intermediate. At the time when the best pulp was obtained (11 hours) the lignin content is in close agreement with that of strong Mitscherlich pulp, **viz.**, 7.56 per cent. Loosely combined SO_2 values show a decline after reaching a maximum at 11.5 hours, suggesting a decomposition and liberation of SO_2 in the later stages of the cook. The organic combined sulphur shows a rapid increase over the periods during which there is rapid removal of the lignin; but it does not reach an approximate maximum until the end of the cook, showing that the action of sulphonation may continue upon the lignin already separated. When the combined SO_2 content of the liquor (determined by Sander's method) becomes constant, it shows the point at which further cooking will not greatly improve the pulp. The applications of these reactions in the mill will be of value for determining the location of defects in cooking methods rather than as control methods. Under the conditions of the experimental cooks, a pulp that would be equivalent in all respects to commercial pulps could not be made. Another cook was made with acid having the following composition: total 5.60 per cent. free 4.46, combined 1.14. The temperature was brought to 100° in 3.5 hours, and was then raised at a rate not exceeding 3° an hour to a maximum of 137°. The maximum pressure was 65 pounds, and the cook was blown at the end of 15 hours. The color of the pulp was excellent, strength good, the pulp was readily bleachable, and the cellulose and lignin contents were 96.05 and 1.62 per cent. respectively. The authors conclude therefrom that, while sulphonation may be an essential part of the reaction in sulphite cooking, it is of greater importance, from the standpoint of the commercial value of the pulp, to maintain at the finish conditions favorable to hydrolytic reactions, **viz.**, a high concentration of free SO_2. -A. P. -C.

R.—General

R-5 Waterpower in the Pulp and Paper Industry in Canada. Paper, xxx, No. 7, 12-18, (April 19, 1922); **Pulp and Paper**, xx, 383-386, 407-411, (May 11 and 18, 1922). A detailed analysis of the consumption of hydraulic power in the pulp and paper industry in Canada, taken from a manuscript prepared by the Dominion Water Power Branch, Dept. of the Interior, Canada. -A. P. -C.

R-10 Lumber and the Banks. W. P. RAPLEY, Sherbrooke. **Pulp and Paper**, xix, 1207-1210, (Dec. 1, 1921). A presentation of the bankers' point of view with regard to financing lumbering operations, which is applicable in a large measure to pulp wood operations as well. -A. P. -C.

UNITED STATES NOTES

According to an official announcement from Washington, John Matthews, jr., has been appointed to head the Paper Division as successor to Grosvenor Jones. Mr. Matthews was formerly sales manager of the Miami Paper Company of West Carrollton, Ohio, and he has been associated with the work of the division during recent months. He will begin his work as chief of the division on August 1.

The American Writing Paper Company is making preparations for the staging of its educational paper-making show in connection with the Boston Graphic Arts Exposition scheduled for the week of August 28. Among the features to be exhibited are the famous "baby" paper-making machine, the smallest device of its kind in the world, a miniature paper cutting and trimming machine, a model loft-drying outfit and a research and testing laboratory fully equipped.

The Technical Association, 18 East Forty-first street, New York, is distributing to persons interested in vocational education a booklet on the subject by J. C. Wright, director of the Federal Board of Vocational Education. The booklet gives the scope of vocational education, analysis of payroll jobs and synopsis of the textbooks. Its title is: "Vocational Education in the Pulp and Paper Industry."

The Vocational Education Committee is in receipt of a contribution of $200 from the Minnesota and Ontario Paper Company, International Falls, Minn., toward the fund to complete the textbooks on pulp and paper manufacture that are being prepared.

Briefs against the proposed tariff of 4 cents per pound on casein have been filed with the Senate Finance Committee by industries and interests allied with paper in addition to the recent brief of the coated paper manufacturers who would be directly affected. Those having put themselves on record up to the present are: The National Paper Trade Association, The National Association of Book Publishers, the Plywood Manufacturers' Association, The National Association of Stationers and Manufacturers and the National Association of Publishers. Replies to the briefs from various senators indicate that the duty will be opposed by leading members of the Senate when the matter comes up for final action.

A consolidation merging the Walloomsac Paper Company and the Stevens & Thompson Companies, North Hoosick, N.Y., was recently effected, according to an announcement sent out to the trade. All communications relating to any of these mills should be addressed to the new company, Stevens & Thompson Paper Company, North Hoosick, N. Y.

With the completion of a deal bringing Franklin investors into the vulcanite roofing plant of the Beaver Board Companies at Franklin, Ohio, work of rebuilding the portion of the mill destroyed by a fire last March will be undertaken in the near future. This allays the fears of residents of the enterprising mill center who had been apprehensive lest outside ownership of the mill would work to the disadvantage of the town. The Franklin holdings of the Beaver Board Companies are to be transferred to a corporation, which is to push the work of rebuilding the mill as speedily as possible. According to present plans, the management and superintendency of the plant will become more and more a local enterprise. If re-construction work progresses as rapidly as planned, the mill will be in operation by September 1, giving employment to a large force of men, mostly Franklin residents.

After a shut down of more than a year, the Tulpehocken Mill of the Reading Paper Mills Company, Reading, Pa., is about to resume operations. It engages exclusively in the production of unbleached rope fiber paper for sanding purposes. While the plant has been idle, the machinery has been overhauled, replacements made and a sprinkling system has been installed.

A notice given out to the trade by the S. D. Warren Company announces that the Charles Beck Paper Company, Philadelphia, has been appointed co-distributor with the D. L. Ward Company for the S. D. Warren line of printing papers, regarded everywhere as one of the most desirable in the market. It has been known for some time that applications by Philadelphia firms for the Warren lines were quite general, and it was only recently that the field representative and the sales manager of the Warren Company stopped in Philadelphia with the idea of selecting an additional distributor.

The box board and paper box end of the trade in New England is holding up very well at present because of orders in considerable volume coming from shoe manufacturers. The latter are purchasing more paper boxes and other lacking material than ever right now because of the increased demand for shoes. Several other commodities requiring paper and board containers are also showing increased demand.

Henry L. Vanderhorst, building contractor of Kalamazoo, Mich., has been awarded a contract by the Kalamazoo Vegetable Parchment Company to put up buildings for a new two machine mill. Work on the construction of the plant will be begun almost immediately. The cost of the buildings in this new mill will approximate $500,000 and a similar amount will be expended for mechanical and power plant equipment. The plant, as projected will be one of the finest of its kind in America. It will have a daily producing capacity of 120 tons of high grade papers. The Wheeler-Blaney Company, of Kalamazoo has the contract to install piping, plumbing, heating and sprinkler systems. All architectural and engineering details are being handled by Billingham & Cobb, Kalamazoo.

A pamphlet is being circulated among the legislators in Washington, entitled, "Production and Consumption of Chemical Wood Pulp in the United States. It is devoted in the main to telling "why wood pulp should remain on the free list." The pamphlet, it is said, has been prepared by the American Writing Paper Company.

A stimulus to paper buying is being noted in the Chicago market, and merchants there are attributing the sudden revival in orders to the decreased freight rates effective after July 1. Ordinarily the business during the summer months is rather slack, but many consumers seem to be buying earlier, prompted by the reduction in carrier charges.

Investigations are being conducted in Portland, Me., by a New York concern looking into the possibilities of that port as a terminal for pulp shipped from Norway and Sweden.

PULP AND PAPER NEWS

The mill of the St. Lawrence Paper Mills, Limited, now under construction at Three Rivers, P.Q., will be equipped with 8 magazine grinders built by the Waterous Engine Works, Brantford, Ont. The mill will have both rail and deep water connection to take care of the receipt of pulpwood and the shipment of paper. Providing weather conditions are favorable for building the mill, the first newsprint machine of the two ordered from the Dominion Engineering Works, Limited, will be in operation at the beginning of next year.

The lumber trade througout Canada is very active. In the West the mills are running fully, and in the East there is a strong demand for domestic and American requirements. This applies particularly to soft woods. The trade, however, has lately sustained severe losses owing to the failure of several firms, notably one in Montreal and one in Quebec city. The liabilities of the Montreal firm are $925,000 with an estimated surplus of $170,000. The serious fall in prices last year entailed heavy losses, the effect of which is now being felt. The trouble was, as a matter of fact, postponed, and the low prices this year have prevented a recovery.

Mr. S. Rodier, Rolland Paper Company, Limited, has been presented with a white gold watch, to mark his 20 years' service with the company. The watch was subscribed for by employees of the company. Mr. S. J. B. Rolland, the president, in making the presentation, made some very complimentary references to Mr. Rodier and his work.

The Montreal Paper Club will hold a picnic on Saturday, July 22, at the Beauharnois mills of the Howard Smith Paper Mills, Limited. The program includes a visit to the mills in the morning, sports in the afternoon, and an entertainment or dance in the evening. It is to be an all day affair.

The Rolland Paper Company Limited, have just completed a steel bridge at the St. Jérôme mill. This replaces a wooden structure.

Mr. V. G. Haney, the Toronto representative of the Rolland Paper Company, Limited, was in Montreal last week.

PULP AND PAPER CORP. ORDERS MOTORS

The Westinghouse Electric and Manufacturing Company has recently received an interesting order from the Washington Pulp and Paper Corporation, Port Angeles, Washington.

The order includes one complete sectional individual motor drive for a 164 in. Bagley-Sewall Fourdrinier newsprint paper machine for paper production speeds of 400 to 1,200 ft. per minute, including a 600 kw. syncronous motor generator set, nine section motors and gear units, and control equipment; three 1,000 h.p., 240 rpm. synchronous motors for driving pulp grinders; one 200 kw. synchronous motor exciter set for pulp grinder motors; one 3330 kv-a., 300 rpm. vertical waterwheel type generator with direct connected exciter and one 2500 kv-a., 120 rpm. engine type AC generator.

The apparatus ordered from the Westinghouse Company will be used for increasing the capacity of the plant, which was built four years ago and is one of the most modern on the Pacific coast.

WALMSLEYS LINKED WITH ARMSTRONG, WHITWORTH

For some time past rumor has been busy connecting the name of the famous makers of Paper making Machinery, Messrs. Charles Walmsley & Co. Ltd., Bury, Lancs., with that of the Armstrong, Whitworth Group, and we are very glad to be able to state that rumor has not proved wrong.

As our readers will doubtless know, Sir W. G. Armstrong, Whitworth & Co., Ltd., established some time since a large Hydro-Electric Department, which is now busy in all parts of the world, and exceptionally so in wood pulp producing regions of the Northern Countries, and it is only natural that a combination between the two firms should prove advantageous to both. On the other hand Walmsleys have reached such a high standard of excellence in the manufacture of Paper Making Machines that they occupy a premier position, not only in Great Britain, but in Canada, and wherever paper making machinery is installed.

The Walmsley machines for the manufacture of newsprint are at work, turning out many thousand tons of paper per day. Their crowning success has been the introduction of machines 232 in. wide for the manufacture of newsprint. The first machines have been installed at the Abitibi Power and Paper Co. Ltd., Canada. These machines started up with the minimum of trouble and are now working most successfully, and are making over 470 tons of paper per week, reaching an operating efficiency of 97 p.c.

It is worthy of note that Walmsleys have achieved a high reputation for auxiliary machinery, such as Super Calenders, Reels, Cutting Machines, High Speed Steam Engines, etc., and the plant at Bury is always kept to its full capacity.

Walmsleys have enjoyed the position of having a waiting list for their machines for many years, and the successful introduction of the 232 in. Newsprint Paper Making Machines, which are the largest machines in the world, has compelled the Directors to ensure a larger output, and with this in view, the arrangement with Sir W. G. Armstrong, Whitworth & Co. Ltd., has been put through, so that the latter's Openshaw Works may co-operate in the execution of contracts.

The new Walmsley Company, Ltd., will retain the services of Mr. John Wolstenholme as Managing Director, and Mr. William Adamson as Technical Director, but in view of the absence of Mr. Wolstenholme abroad, Mr. Adamson will act as Deputy Managing Director, and will, as stated above, work in the closest connection with Sir W. C. Armstrong, Whitworth & Co's Hydro-Electric Department, at 8, Great George Street, Westminster, S.W. (Telephone — Victoria 4010) whose offices will be used as the London offices of the Walmsley Company Ltd.

This working arrangement arrived at between the two firms will enable the Walmsley Company to take advantage of the world-wide organisation of Sir W. C. Armstrong, Whitworth & Co. Ltd.

George C. Russell, who has been in charge of the Barrett Company's paper mill at Elizabethport, N. J., for the last fourteen years, has resigned. Mr. Russell intends engaging in a new line in the near future, following a much-needed rest.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, July 11. — The past week was characterised by a slight falling off in business as far as paper jobbers were concerned. One must expect a slowing up during the summer months. Jobbers, however, anticipate a satisfactory turnover during the remainder of the year, even allowing for a comparatively quiet period during July and August. The harvest in the Province of Quebec and in the West promises to be good, and if expectations are realised, trade will improve and with it the paper industry. In every section there is a feeling of optimism, based on the improved commercial situation. The mills making book, writing, wrapping, and other papers report that the orders are coming in at a good rate. The drawback is that, although the aggregate is substantial, the orders are, as a rule, small. This takes the gilt off the ginger bread, as it increases production costs.

Newsprint was the feature of the week. The report that the International Paper Company had advanced the price to $75 per ton for new business came as a surprise, particularly as that company previously forced a reduction to $70. The explanation of the rise is that the company is about to reopen mills where the cost of operation is high. The fact that the International Company has taken this step is an indication of the strength of the market. The effect upon Canadian mills will probably be very small, as the majority of the companies are under contract for the balance of the year at $70 per ton. A few spot lots may be sold at the higher figure. The policy of Canadian mills has been to maintain the $70 basis for the remainder of 1922. When the demand for newsprint increased earlier in the year there were persistent reports that the mills would insist on a readjustment when the quarter closed, but the mills announced that there was no intention of raising the price. In any event, the action of the International Company is a distinctly favorable point, and may have a bearing on new contracts for 1923.

In other lines business has been rather slow. Book and fine papers fell off a little, tissues and toilets have been dull; but boards are improving.

The export trade is keeping up, Australia and New Zealand being particularly good customers for writings, books, and bonds.

The pulp market maintains its better feeling. Bleached sulphite is still in good demand, while there is a slight strengthening of kraft. The board makers in the Middle West States are more active and are buying more freely of Canadian pulp. Groundwood is moving in larger quantities, but prices are not satisfactory.

Toronto Topics

There is very little to report by way of change in the general situation. A healthy gradual improvement is shown in merchandizing though by no means as much material is moving as could be desired, and buying is on a conservative basis. Credits are in fairly good shape with rural collections reported by some traders as being in better condition than urban.

-Employment conditions are showing slight improvement with continued activity in building and road work.

Market Notes

· Pulp prices continue steady and firm.

Groundwood—Delivered, $30 to $40.

Sulphite—Delivered, News, around $60; Book grades $65.

Sulphate—Delivered $70.00

Book and Writing—Show fair activity.

Wrapping—Manufacturers report good business. Prices remain unchanged.

Bags—Light Manilla 62 p.c. — 7½ p.c. off 100 M Lots. Heavy Manilla 60 p.c. off 100 M Lots. Light Kraft 60 p.c. off 100 M Lots. Heavy Kraft 50 p.c. — 10 p.c. off 100 M Lots. White Confect. 17½ p.c. — 10 p.c.

Towels— Car lots

Interfolding per case, $5.63 net.

Bleached White, Rolls of 150 Towels, 50 rolls to case, $22.00 less 22 p.c.

Natural, Rolls of 150 Towels $19.00 less 22 p.c.

No. 3. Towels, Rolls of 150 Towels $13.75 less 22 p.c.

Toilets—Car lots. List Prices, less 20 p.c. and 25 p.c.

Paper Stock Market has firmed up with good demand for all grades of New Cotton Cuttings and prices are inclined to firmer.

Manilla prices are firm.

Roofing Rags are strengthening.

NEW YORK MARKETS

New York, July 8 — (Special Correspondence) — An increase in the price of newsprint has been made by several of the large domestic manufacturing concerns, including the International Paper Company, which development clearly overshadows all other events in the market this week. The advance in newsprint amounts to a quarter of a cent per pound or $5 a ton, bringing the revised price up to $75 per ton f.o.b. mills. The change was effective July 1 but the trade was not aware of it generally until the first part of the current week, when a report was printed in one of the daily newspapers which subsequently was confirmed by officials of the International Paper Company. The advance applies only to new business and to increased tonnage taken by publishers under existing contracts. It is understood that newsprint manufacturers in this country are well booked up until the end of the year, consumers having contracted to take very nearly all the tonnage the mills can turn out, and the higher price therefore will involve only a small percentage of the production.

The advance in newsprint came as a surprise to most members of the trade. On the other hand, there are those who for some time past have been expecting a jump in print paper prices, these traders appreciating the marked change in market conditions during the past several months, but even these members of the trade were somewhat surprised owing to the rather novel manner in which the increase was effected. So far as is known no public announcement was made by the manufacturing companies relative to the advance; the public and the trade apparently were left to find out about the jump in price as best they could, though when the news leaked out it was readily confirmed by mill officials. Last year when periodical changes were made in the price of newsprint when prices were falling following the peak market levels reached during the after-the-war boom, manufacturers issued announcements of the revision of prices a month or so before each change was to become effective. The trade therefore was of the belief that if any revision in an upward direction was contemplated similar notice would be given, but this was not the case, and early this week even after the new price went into effect most members of the trade were ignorant of the new scale of prices and the reason for the rise. In passing, it might be said that it has several times been hinted in this report from New York in recent issues of the *Pulp and Paper Magazine* that an advance in newsprint was likely, so that readers who have followed these reports should have been sufficiently cognizant of the situation not to have been caught altogether unawares by the increase.

Aside from the upward revision in newsprint prices, no changes of note have occurred in paper quotations. Fine papers are enjoying a steadily broadening demand, which is something out of the ordinary for this time of the year, and which doubtless can be taken as an indication of a constantly improving business situation generally. Box boards also are moving in increasing tonnage and at prices which seem likely to score further advancement almost any day. The market for book paper is still rather quiet and prices are irregular, yet the vice-president of one of the largest book paper manufacturing concerns in the States yesterday stated that demand was showing consistent growth, and he expressed much confidence in the future of the book paper market.

The latest Federal Trade Commission's review of the paper industry includes figures which show that manufacturing activity on this side of the Canadian border is keeping up at a remarkable rate.

GROUND WOOD. — Developments in the ground wood market are lacking. Demand from consuming quarters keeps up at a surprisingly good rate for this season of the year, and, supported by good buying by consumers, grinders are allowing the market to proceed along its own course and are not pressing matters. Ordinarily this is the period of the year when ground wood prices are on the decline because production is at its height and demand is subsiding, but this is not the case this year. Grinders are working at a good rate, to be sure, being favored with excellent water conditions, but apparently all the surplus pulp that is being manufactured is being stored up to tide producers over the hot and dry period that will likely come later in the summer. Quotations on domestic ground wood range around $30 or $31 per ton at grinding plants, and it is said on high authority that most of the current business is going through at this price basis.

CHEMICAL PULP. — There is a steady tone to quotations on most grades of chemical pulp. One still hears reports of transactions here and there, chiefly involving domestic pulp, at prices a little below recognized market levels, yet on the other hand everyone on the selling end of the trade is talking of higher prices and most of them are predicting pulp will be bringing considerably better prices within a few weeks. Foreign pulps evince a decidedly stiffening tendency, and importers are reported becoming more and more insistent in their demands for full quoted figures, claiming that they cannot purchase fresh supplies of pulp in Europe at former prices. Another bullish factor is that paper mills are absorbing pulp in larger tonnage than they usually do in the summer, and the trade looks for demand to hold up on the prevailing scale throughout July and August—invariably the quiet months in the pulp trade.

RAGS.—Not very much change has been recorded in the papermaking rag market this week but the tone continues firm and reports say that sales are being made with rare exceptions at prices which represent the top of

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WOOD PULP

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MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

market levels. Roofing stock is being absorbed in good amounts by felt paper mills and prices on this class of rags show a strong upward trend. Dealers in New York seem to be having little or no difficulty in obtaining 1.20 cents a pound for No. 1 roofing rags f.o.b. this city, and 1.10 cents for No. 2 packing, and there are quite a number of dealers who are seemingly unwilling to book more orders at these prices, it being said that packers are holding out for higher figures. Foreign roofing rags are selling at between 1.17½ and 1.20 cents per pound ex dock New York for dark cottons, and quotations on these rags are now mostly on higher levels.

The demand for No. 1 white shirt cuttings holds up well and writing paper mills are paying 10.50 to 11 cents per pound f.o.b. New York. Unbleached muslin cuttings are firm at 9.75 cents a pound, and new light silesias at 6.25 cents, and fancy shirt cuttings at 5.75 cents. Old whites are moving freely, and old blue rags are in better call than in some time.

PAPER STOCK. — While several grades of old paper are somewhat easier than recently, the market as a whole displays a firm undertone and prices are well maintained. Soft white shavings have sold at slightly lower prices this week, mills having bought No. 1 shavings at around 3.60 to 3.65 cents per pound f.o.b. New York, and old magazines have been a little off in price at about 1.80 cts. New York, but news grades, kraft and manilla hold strong with sellers in most cases quoting higher prices if anything. Folded newspapers are quoted at 70 to 75 cents a hundred pounds f.o.b. New York, No. 1 mixed papers at 57½ to 60 cents, overissue newspapers at 95 cents, No. 1 kraft at 1.85 cents, white news cuttings at 1.80 cents, ledgers and writings at 1.90 cents and No. 1 manillas at 95 cents to $1. Board mills are active buyers and demand from such sources makes for a relatively stronger tone in the low grades than in the high grades of paper.

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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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:-: EDITORIAL :-:

McKINLEY'S MOTTO

Just the other day we read again, a favorite motto of William McKinley, twice elected President of the United States. It was: "I believe that continuous employment, good wages, and education make for prosperity and happiness." It will be remembered by many of our readers that the slogan for Mr. McKinley's second election campaign was "Four years more of the full dinner pail." His whole heart was full of an appreciation of the problems of the working man and he felt his greatest obligation was to maintain and increase the prosperity and happiness of the whole people. Undoubtedly he had the right formula: Continuous employment, good wages, education. Here are three fundamentals, more or less inter-dependent. Good wages depend on the ability of the workman, and this depends in part on his education as well as on his inherent qualities, such as loyalty, intelligence, skill, and strength. An education can be obtained by any one who has the desire and determination to get it. There are numerous instances of illiterate adult immigrants who have learned to read through their own persistence and the kindly assistance and encouragement of some one (there is always such a one) who was willing to give a little time to such work. From that point, the borrowed book, the picked up magazine, the night class, and the correspondence course have enabled the desire for knowledge and the ambition for success to find expression in better service, which is sure to be paid for.

But the payment of good wages in recognition of ability is not the basis of either prosperity or happiness if employment is not steady and assured. This phase of a man's life is not entirely in his own hands. He is principally responsible for the attitude of his employer toward him, and his personal character and efforts determine whether he stays on the payroll. But the "temporary lay-off" that is so much dreaded does not come to a man so much because of his unfitness for his job, as because the product of his labor is temporarily unmarketable. If the plant must be operated at part capacity it is a matter of relative ability that decides whether *A* or *B* shall be retained. The question then arises, "Why were they both employed in the first place, if they could not both be kept on the pay roll?" The answer will probably be that the extra man was needed for the peak load and put on just for that purpose. The power house has a peak load too, but this is met by running the plant over the rated capacity for the time being, or by having an extra boiler for a standby of reserve power. A spare generator or hydraulic unit is carried for the same purpose. Even the farmer has to provide for a peak load. He feeds an extra horse all winter and keeps his hired man tinkering at odd jobs that take up about half his time so as to have him when needed. The manufacturer carries his overhead of investment, depreciation and insurance on machinery that is not run to capacity more than 75 per cent. of the time as a rule, and not often above 90 per cent. of capacity. It is there when needed and most industries think it worth while to carry this extra charge on business in general. Of course the consumer pays for it.

But how is the consumer treated, and who is he? Ultimately, he is the man employed to run this machinery. Very often, he is taken on when needed, and then at the first sign of a slump in consumption he is laid off. His income stops and he quits buying *the product of his own machine*, ultimately. His erstwhile employer is housing and paying the keep of the machine, why doesn't he pay at least a retainer to the man he has needed and will need again? If the public insists on seasonal purchasing with its attendant horde of industrial ills, let industry put enough on the selling price to establish a sinking fund that will pay for part time employment of the force required to carry the peak load. The consumer of electricity pays for the extra generator at the power house. The other alternative is to provide manufacturing capacity that will provide for the normal need when run practically at capacity. Then let the public buy regularly, or go without.

Now is the time to consider the problem of unemployment.

AN EXHIBIT OF TECHNICAL PHOTOGRAPHS

There was recently formed, an organization known as the Technical Photographic and Microscopical Society. Among the members are people who are interested in photographic records of various kinds. The value of the photograph is coming more and more to be recognized, not only as almost infallible proof of what has happened, but in the hands of a skillful and experienced operator it may be interpreted as an accurate forecast of what will happen.

Probably no industry offers such opportunities for the development and use of the microscope and camera as the pulp and paper industry. The camera begins its service with the photographic survey of the timber limits, the microscope assists in the identification of insect and fungus enemies, the microscope traces the course of the cooking of the pulp or the grinding of the wood, it helps to indentify the raw materials that come into the manufacture of the paper, it follows the progress of the beating and assists in the analysis of the finished product. Combined with the microscope, the camera can furnish a permanent record of the various steps that have been followed by the eye. With the exception of the balance which, however, should be included with rather than compared with the camera and microscope, it would be hard to find two pieces of apparatus that are capable of giving such excellent service to the manufacturer of paper and pulp.

The recently formed organization referred to is fully alive to the advantages of cooperative effort and, being fully convinced of the large and valuable service that its members can render to the industry in general, an exhibition of industrial and technical photography is to be a part of the National Exposition of Chemical Industries at the Grand Central Palace, New York, from September 11th to 18th. The management of the exposition has shown a very generous attitude towards such societies and a very much appreciated disposition to assist them in their work.

In order to facilitate and encourage the work of the society and to promote the cause of technical photography, the *Pulp and Paper Magazine* is very glad to make this editorial announcement of the exhibition and strongly urges anyone who has even a single photograph of interest, to communicate at once with the chairman of the Society, Mr. John H. Graff, Berlin, N.H., and to plan on sending photographs for the exhibit directly to the Technical Photographic and Microscopical Society, c/o Mr. John H. Graff, National Exposition of Chemical Industries, Grand Central Palace, New York, and to despatch same so as to arrive in New York not later than September 9th.

WATCH YOUR WORDS

From an interesting paper on "Some Legal Aspects of Engineering Contracts" read before the Toronto Branch of the Engineering Institute of Canada, by Mr. Alfred Bicknell, a well known lawyer, we make an excerpt which is of interest to pulp mill executives. Mr. Bicknell was pointing out that the introduction, in letters of acceptance, of terms or restrictions not embodied in the offer, causes the intended acceptance to constitute not a contract but a new offer.

The cited case is as follows:—

"H. and Company wrote The Pulp Company, 'We have on hand 1,200 cords of spruce and balsam pulp, which we are willing to sell to you at $12.00 per cord f.o.b. shipping point, shipments to commence immediately and to continue at least. . .shipments per month.' The letter of acceptance started off something like this: 'We are in receipt of your letter of. . .and would be glad to have you ship us the pulpwood which you offer, but it must be understood that the wood will be cut in four-foot lengths and will be free from knots and dosey centres and will be good sound spruce and balsam pulp, not more than ten per cent. of balsam.'

No further correspondence ensued on the question of contract, but the shipper commenced to ship and shipped several car loads and then stopped, claiming that the acceptance came so late that a good deal of the wood was sold to other parties and they had no further wood left. An action was brought in connection with the contract and you will see, if you test the matter out, that it rests on two points:

1. A straight offer;
2. An apparent acceptance of the offer, but the acceptance was so qualified that it did not make a contract and without a further acceptance by the seller, of the terms set forth by the purchaser, no contract was made.

All that the purchaser had to do to make a valid contract was to acknowledge receipt of the seller's letter and use four words, " We accept your offer."

If an alleged acceptance is not in fact a straight unqualified acceptance of the terms of the offer or purports to add any new term to the bargain it is merely a counter offer and no contract arises; Navon Union vs McLoughlin —4 Ir. R. 451 (1855); Gray vs Smith (1889) 43 Ch. D. 208."

COBWEBS

The careful reader will notice that the Mr. Bicknell, in the preceding comment makes no mention of the loose and ambiguous use of the word "pulp".

Congratulations to Mr. Geo. Chahoon Jr., who passed the half way post of his first century last Friday. Mr. Chahoon's spirit will live in Grand'Mère long after he is dead.

An excellent map of France, showing the location of the pulp and paper mills has been prepared by La Papeterie, 9 rue Lagrange, Paris (5e). Mills in Belgium, Switzerland and Northwestern Italy are also shown. Some of the more important centers are given in detail. The map is for sale in two forms, 1. Mounted on cloth, shipped in a box, 2. wall map, on cloth, varnished and mounted on rollers. The prices, post paid, are 13.50 and 22.50 francs, respectively.

A party of 50 to 75 is expected for the Paper Club Picnic.—See page 612.

It is proposed by the Asbestos Cement Co., of Natal, South Africa, to produce a substitute for strawboard. A Canadian expert in the production of pulp boards has been secured, and it is understood that concentration will be made on productions of this kind.

Recent news from South Africa states that the Premier Paper Mills, of Johannesburg, which have been converted into a limited liability company having a capital of £65,000, are to specialise in the manufacture of wrapping paper, for which raw materials grown in the country are to be used.

The De-Inking of Old Newspapers[*]

By SIDNEY D. WELLS
Forest Products Laboratory, Madison Wis.

The use of old paper stock for the manufacture of paper is very old, and we find mention of a process by George Balthasar Illy in Denmark as early as 1695. In 1765 Dr. Jacob Christian Schaffer mentions its use in his "Papier Versuchen." In 1775 Prof. Klaproth of the University of Gottingen suggests the use of turpentine and clay for the purpose. In 1794 during the French Revolution Citizen Masson, a woman, ran an establishment for the conversion of old papers into new. In 1801 Matthias Koops established the Neckinger Mill at Bermondsey, England, to de-ink printed papers and make new paper therefrom, using dilute alkali to dissolve the varnish in the ink, clay to act as a currier, and washing to remove the carbon black; bleaching with chlorine followed to brighten the stock. Henry E. Rogers is first mentioned to use old papers in the manufacture of paper in the United States in a mill near Hartford, Conn., in 1849. During the last fifteen years, however, interest in the subject seems to have been unusually active and a great number of patents have been taken out suggesting the use of alkalies, soap, margaric acid and oleic acid in conjunction with alkalies, whiting, clay, talc, ground soapstone, earthy matter, etc.

In general, they consist of the solution of the varnish with some alkaline compound such as caustic soda, soda ash, or sodium soaps to liberate the carbon black and the holding of the particles of carbon black in colloidal suspension by preventing agglomeration with the use peptizing agents such as soaps, silicic acid, aluminum hydroxide, vegetable jellies and clay, talc, whiting, etc., containing traces or small quantities of colloidal matter. In the case of clays and talc, what value they possess as a protective colloid is due to the fact that their smallest particles are peptized by the alkalies, especially if digested at high temperatures. Only papers free from ground wood can withstand the alkalinity and temperatures commonly used, as it is well known that ground wood cannot withstand such treatment without discoloration and attempts to completely de-ink newspapers have as a rule not met with success.

Early in 1921, the Forest Products Laboratory undertook a series of comparative tests at the expense of The Paper De-Inking Co., to determine the efficiency of a process patented by them which proposed using bentonite as the peptizing agent or protective colloid in conjunction with alkalies in comparison with other methods proposed. The result of the work showed such marked improvements in the process by the use of bentonite, especially when applied to news, that it seemed desirable to publish them and discuss so far as possible the principles involved.

Bentonite is defined by the United States Geological Survey as a transported, stratified, volcanic ash that has been altered shortly after deposition. It is very fine grained and has the property of swelling in contact with water to several times its original volume into a jelly like mass which on further dilution forms colloidal solutions which will remain in suspension indefinitely in mixtures as dilute as one part of Bentonite to fifty parts of water. Like any natural product, different deposits differ considerably and the finest grained or most colloidal that have come to the writer's notice occur in Wyoming, although samples from many deposits in that state proved to be low in colloidal content. Samples freshly taken from the quarries are of a greenish yellow color but on exposure to the air become light cream. Numerous chemical analyses have been reported and considerable variation exists in samples from various sources. It is a mineral akin to kaolin although generally yielding on analysis more silica, alumina, and more magnesia and has been found to be an excellent filler for paper. It is its physical properties, however, that render it of most value in de-inking paper, and of these, fineness is of most importance. Comparative tests with an excellent deposit of Wyoming bentonite, English china clay, and Georgia china clay in which one part of each was mixed in one hundred parts of water gave the following results on standing twenty-four hours:

	Parts remaining in suspension
Wyoming Bentonite	.78
English China Clay	.001
Georgia China Clay	.01

In de-inking printed paper and especially newspaper, it is comparatively easy to loosen the carbon black by dissolving the varnish of the printing ink by means of alkalies such as sodium carbonate or caustic soda using as little as forty pounds of sodium carbonate per ton of paper and temperatures as low as one hundred and twenty degrees Fahrenheit. Such treatment will not injure ground wood pulp and if the carbon black could be completely washed out after liberation a satisfactory material would be obtained. Unfortunately the fibres of the paper stock serve as a very effective filter in immeshing the particles of carbon and there are no means of washing in common use that will permit their complete removal without excessive losses of pulp or expenditures of time, power, and water that are prohibitive. In fact a point seems to be reached beyond which it is impossible to remove the remaining traces of ink. The problem is entirely different from the removal of soluble impurities such as cooking liquor or bleach residues and very successful methods for handling the latter impurities will not answer the purpose. With bentonite, however, we have a substance that will pass through ordinary filters and with its enormous surface, on account of the extreme fineness of its particles, will carry the carbon black along with it. Even when washing with bentonite, however, it is better to avoid the formation of a sheet of felted fibers against the wire surface which will form a good filtering medium, and drum washers are consequently better than decker washers.

LABORATORY TESTS

In making the comparative tests referred to the semi-commercial apparatus available at Madison was used. The methods followed are given below:

WASHING THE STOCK

Charging the Washer

The 25 lb. Hollander beater was half filled with water and heated by flowing in steam to a temperature of between 50 and 75 deg. C, while from 1.5 to 2.5 lbs. of soda ash were added and allowed to dissolve. From 2 to 3¾ lbs. of ground bentonite were slowly added and beaten into colloidal solution by the action of the beater roll. If the foaming was excessive about ¼ pint of kerosene was either added to the beater or poured over the old papers, weighed out for the charge which amounted to from 25 to 37 lbs. of printed newspapers or periodicals. The paper was then added to the beater with the beater roll raised from the bed plate and water was slowly added until the beater was completely charged. Steam was then blown in to raise the temperature to between 50 and 75 deg. C, and the paper macerated from 10 to 20 minutes.

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[*] Address Before the Annual Convention of the American Pulp and Paper Mill Superintendents Association, at Kalamazoo, Mich., June 2, 1922.

The drum washer was then lowered and washing commenced. When it had proceeded far enough to materially reduce the apparent quantity of ink present, ten per cent of sulphite pulp, based on the weight of the old papers charged, were added to give the desired strength and facilitate the completion of the washing by rendering the stock more open. The speed of washing seemed to be directly proportional to the rate of the removal of water by the washer and anything that increased it increased the rate of washing correspondingly. When the washing had proceeded to the point where the waste water became free from ink, about 100 c. c., of sulphuric acid were added to neutralize any alkali remaining and brighten the color of the stock. The washing was continued about ten minutes when the washer was raised and sizing, loading, and coloring materials were added to give the type of paper desired. In the case of news the stock was simply tinted and alum added. With the book paper runs, 15 per cent of clay and 1.5 per cent of rosin size were added. The furnish was run over the Fourdrinier paper machine into machine finished paper of the same type as that from which it was made.

Yield and Water Measurements

The laboratory runs seemed to indicate that either used news, book, or bond paper could be satisfactorily washed with the help of bentonite and used in making the same type of paper. Yield determination on several runs indicated an average loss of from 9 to 10 per cent. The average time for washing the news runs was one hour. Measurements on the water used indicated a rate of 3.5 gallons per minute during the washing period. The details of the several runs are given in Table 1.

MILL TRIALS

In view of the success obtained on a laboratory scale, in using bentonite for reclaiming used printed paper, Mr. O. L. E. Weber, General Manager of the Watab Paper Company, Sartell, Minn., was interested in trying the process in his mill and a series of runs were made in June, 1921.

Sorting

The conversion plant at the Watab Paper Company was located in a three story concrete and brick building of excellent construction in which there was no perceptible vibration. On the top floor was the sorting department which was only used in these runs to remove straw board and metal and fill trucks with loads of from 600 to 1,300 lbs. each of old news.

Cooking

At one end of the second floor were two cast iron beaters of 3,000 pounds rated capacity provided with sheet iron covers and vent pipes and known in the mill as cookers. Steam connections were also provided in the sides for the admission of steam to heat the contents of the beater to boiling and hold them at that point. The bars on the beater rolls were spaced about five inches apart and since there were no bed plates the bars merely served as paddles to circulate the stock and gently macerate it. The cookers emptied into a concrete chest on the first floor from which the stock was pumped to a decker beside the cookers. The liquor from the decker was returned to the cookers and the stock was washed from the decker with water into a second concrete chest. By use of the decker approximately half of the soda ash and one third of the bentonite was returned to the cooker making possible a corresponding reduction in the amounts of the two needed.

Washing

From the second concrete chest the stock was pumped to any one of the four 2,000 lbs. Jones washers equipped with four drum washers each. The drum washers on one of these, washer No. 4, were covered with a special nickel alloy wire, 80 mesh, through which it was possible to remove 146 gallons of water per minute, while with each set of four drum washers on the other washing engines which were covered with a corduroy type of copper wire, only 60 gallons per minute could be removed. The rate of washing was proportional to the rate of the removal of water, and in the case of washer No. 4, it was found possible to thoroughly wash the stock in one hour, while the other three washers took from two and one half to three hours. After washing, dilute sulphuric acid was added in the proportion of 13½ lbs. per ton of old papers. A considerable brightening of the color was effected and the stock was dumped into a third stuff chest.

Screening

The stock was screened on flat diaphragm screens and run over a thickener or decker into a fourth stuff chest from where it was run through a Jordan and over wet machines into laps of pulp which were weighed and tested for moisture in order to determine the yield. The proportion of chemical and bentonite used in the tests were as follows:

MATERIAL CHARGED

Series No.	Cook No.	Paper	Soda Ash	Bentonite	Time in Cooker min.	Temperature Degrees C.
1	1 to 10	3,000	150	250	30	70
2	11	2,500	100	250	30	70
2	12	2,500	50*	125	30	70

* Black liquor returned to cooker from decker in running preceding cook. Decker was not used with all other cooks.

The first series of runs consisting of 10 cookers of old newspaper stock, thirty thousand pounds of papers were used from which the following lots of pulp were obtained.

68,765 lbs. testing 28.5 per cent bone dry	19,598
14,025 lbs. testing 29.5 per cent bone dry	4,137
1,665 lbs. broken laps testing 29.5 per cent bone dry	491
Bone dry weight of pulp	.24,226 lbs.

Bone dry weight of paper used = 30,000x.90 = 27,000 lbs. yield 90 per cent. (This assumes waste paper as "air dry.")

Tests to determine the volumes of wash water and the fibre, clay and ink in the same were made on runs 14 and 15 in washers 4 and 3 respectively, with the following results:

From the results of the above tests, it appears that the loss of fibre in the washers is only between 2½ and 3½ per cent. Since a yield of only 90 per cent was obtained the remainder of the 10 per cent lost must have occurred at the wet machines or in the cooker. From experience with the solubility of ground wood papers in water and dilute alkali a loss of between 1½ and 3 per cent would be expected in the cookers and the wet machine seems to

	Washer No. 4	Washer No. 3
Volume of washer	4,200 gals.	4,200 gals.
Time to fill with valve turned to washing position	28 min. 45 s.	70 min.
Rate of flow per min.	145 gals.	60 gals.
Total time washing	60 min.	2 hrs. 44 min.
Total volume of water	8,760 gals.	9,840 gals.
Fibre lost	37.9 lbs.	46.9 lbs.
Fibre lost	2.53 p.c.	3.13 p. c.
Ignited residue	49.3 lbs.	58.3 lbs.
Clay in water	58.0 lbs.	68.5 lbs.
Ink removed	3.6 lbs.	5.2 lbs.

be responsible for about half of the total loss. By using the stock directly from the washers much of this loss would be avoided and a considerable saving effected.

Continuous Operation in the Watab Paper Company

As a result of the test in July, arrangements were made for continuous operation on old news. The necessary supply of old newspapers, bentonite, and soda ash were accumulated and in November, 1921, operations were commenced. It was at first attempted to obtain an output of forty tons of de-inked pulp per day. It was found, however, that the color of the stock was too dull for the grades of paper being made and the output was reduced to thirty tons per day to give more time in the washers. At this rate it was found necessary to give close attention to the washing and with the desire to keep the washers in rotation, stock insufficiently washed would occasionally be dropped. After running several months it became evident that the power consumption needed was more than it should be for the output and the quality of the washing too uncertain. A new type of washer seemed necessary that would wash the stock without the necessity of beating the stock more than was necessary for defibering the paper.

Sloping Screen Washer

In order to obtain the maximum washing with the least handling of the stock a sloping frame ten feet wide and twenty-four feet long was constructed with a slope of approximately one foot in five. Over this was stretched a discarded Fourdrinier wire and under the frame was built a wooden tank divided by a partition midway between the ends. Above the screen was hung a grid of showers spaced thirty-six inches apart and supplied with water from a main along one side which was closed by a blind flange half way from the ends. Fresh water was supplied to the lower showers and caught in the half of the tank below after passing through the stock. A centrifugal pump pumped the water from the tank to the upper showers. After passing through the stock on the upper portion of the screen, it was caught in the other half of the tank below from where it was pumped to the Jones washers. The showers were directed at the stock at an angle of about 30 deg. to the surface of the wire and the grid was given a reciprocating motion of thirty-six inches, so that the stock was moved down the screen by the force of the showers and at the same time thoroughly washed. On the return stroke the showers merely added water and violently turned the stock over and over. The old papers were passed from the cookers to the Jones washers as usual and from the stuff chest below the washers pumped to a flow box at the top of the sloping screen washer which distributed it over its entire width. The fresh water from the lower showers washed the stock, already almost com-

				Chemicals Clay used				Washing time		Bleaching time			
Run No.	Old papers used—	Quality of paper	Paper charged air dry weight lbs.	Soda ash, lbs.	Kind	Quantity, lbs.	Sulphuric acid cubic centim.	Temp'ture during maceration °C	Charging and macerating Min.	Washing Min.	Bleach used lbs.	Bleaching Min.	Washing	Color of finished sheet
1	Wisconsin State Journal	News	25	2.00	Bentonite	2.00	100	55	10	65	...	...	...	Fair
2	Wisconsin State Journal	News	25	1.25	Bentonite	2.00	100	57	15	67	...	...	...	Fair
3	Wisconsin State Journal	News	25	1.63	Bentonite	2.13	100	55	15	75	...	...	...	Bright as original
4	Wisconsin State Journal	News	25	2.50	English China clay	2.50	100	55	20	75	...	...	...	Dull
5	Wisconsin State Journal	News	25	2.50	Fullers earth	2.50	100	55	15	60	...	...	...	Dull
6	Ladies' Home Journal	Book	25	2.50	Bentonite	2.50	100	61	15	60	0.4	5	40	Bright as original
7	Ladies' Home Journal	Book	25	2.50	Bentonite	3.75	100	69	25	90	0.3	5	35	Bright as original
8	Miscellaneous Weeklies	Book	32	2.50	Bentonite	3.75	100	65	20	70	0.5	30	30	Bright as original
9	Chicago Tribune	News	25	1.62	Bentonite	2.12	75	55	12	60	...	...	...	Bright as original
10	Ladies' Home Journal Saturday Evening Post Pictorial Review Cosmopolitan, American and Hearst	Book	25	2.50	Bentonite	3.75	75	65	15	90	0.3	5	25	Bright as original
11	London Times and Manchester Guardian	News	25	1.62	Bentonite	2.12	70	57	10	55	...	...	...	Bright as original
12	Wisconsin State Journal	News	30	2.00	....	...	75	55	12	60	...	...	...	Dull
13	Wisconsin State Journal	News	30	1.45	Wilkinite*	2.55	75	62	12	60	...	...	...	Bright as original
14	Wisconsin State Journal	News	30	1.45	Wilkinite	2.55	75	62	12	60	...	...	...	Bright as original
15	Wisconsin State Journal	News	30	2.00	Borax	2.00	70	62	12	60	...	...	...	Dull
16	Wisconsin State Journal	News	30	2.00	Ivory Soap	2.00	70	62	12	60	...	...	...	Dull
17	Technical Notes	Writing	30	1.45	Bentonite	2.55	70	65	12	60	...	...	...	Bright as original

* A very colloidal Bentonite.

pletely washed, and was then passed through the upper showers to wash the stock as it came from the Jones washers. After being used twice, it was still only slightly discolored and was used a third time in the Jones washers. The results obtained were surprising, and it was evident that the stock was completely de-inked.

It must be borne in mind, however, that the papers used were made from furnishes that were colored blue white as is customary and since the dye is not removed the washed stock was blue white and not light yellow like ground wood. For this reason proper adjustments should be made in using it and less dye used than is customary when using ground wood. The effectiveness of the washing is shown by the clay present in the washed pulp and the following ash tests will give a very good illustration.

	Ash
Stock after washing two hours in 2,000 pound beater with four drum washers	3.75%
Stock after washing one hour in 2,000 pound beater with four drum washers and passage over sloping screen washer	1.69%

Ash in paper after washing one hour in laboratory beater under similar conditions using 10% of various clays and bentonite:

	Ash
Bentonite	3.29%
English China Clay	3.52%
Fullers Earth	4.09%

The removal of ink with bentonite is furthermore much faster than with either china clay or fullers earth as is shown by the following Ives tint photometer readings on paper made from the three runs referred to:

	White
Bentonite	61.4%
English China Clay	58.6%
Fullers Earth	59.2%

Similar readings on fresh ground wood, and the two stocks obtained at the Watab Paper Company of which the ashes are given above follow:

	White
Ground wood	70.5%
Stock washed 2 hours with drum washer	60.7%
Stock washed one hour with drum washers and passed over sloping screen washer	66.5%

In tinting ground wood furnishes to give the customary white demanded by the trade, a certain darkening of the color occurs as is shown by the following tests on a number of typical commercial newspapers made from fresh ground and sulphite.

No.	White		White
1	58%	No. 5	55%
2	53%	No. 6	63%
3	65%	No. 7	55%
4	60%	No. 8	57%

The test of 60½% white on paper run at the mill using 80% de-inked stock and 20% sulphite compares very favorably and indicates that for all practical purposes a satisfactory news sheet can be obtained.

During the trial at the Watab Paper Company since last November something over fifteen hundred tons of old newspaper stock has been de-inked using bentonite as the carrying agent. Slight changes were made from time to time and the proportion of chemicals finally used were as follows:

Old newspaper stock	2,500 lbs.
Bentonite	200 lbs.
Soda ash	40 lbs.
Hydrated lime	25 lbs.

With the sloping screen washer, it was found possible to omit the use of sulphuric acid, since the last traces of alkali were removed and with its elimination the yellowing caused by the alkali disappeared. With slight modifications in the washer, the capacity of forty tons of de-inked stock is possible and changes in the arrangement of the plant with an increase in the width of the washer of five feet would make possible an output of fifty tons daily.

Discussion

The possibilities of a process for the recovery of old newspaper stock such as has been described are apparent to any one familiar with the paper industry. When the price paid for old paper stimulated collection, it is reported that about twenty-five thousand tons per month were collected in Chicago of which forty per cent was news. During the same period, Cleveland is reported to have handled approximately three hundred and fifty tons per day of which one hundred and fifty tons was news. In our large metropolitan centers probably twenty-five hundred tons per day were collected which would furnish a very considerable portion of our daily consumption of approximately seven thousand tons of newsprint. The source is furthermore at the place of consumption and the saving in freight is a very important item. The color requirements of the publishers at the present time are very severe and any process that does not thoroughly remove the ink cannot be successful. While considerable difficulty was encountered in meeting these requirements in the trials herein described, the results obtained as the process has been finally worked out seem to justify our belief that they can be met.

MR. CHAHOON'S BIRTHDAY CELEBRATED

Mr. Geo. Chahoon Jr., the head and moving spirit of the Laurentide Company, was fifty years old last Friday. The anniversary was fittingly celebrated by Mr. Chahoon's many friends, especially those who work with him day by day in making Laurentide an honored and honorable name the world over. An informal reception gave an opportunity for the expression of good will and good wishes and the presentation of a very nice token and souvenir. This was a loose leaf album containing snap shots of Mr. Chahoon's friends in characteristic poses, with a letter from each. These were arranged in the order of the length of the acquaintance. It is a store of happy memories and friendly cheer.

Not to be outdone by the residents of Grand'Mère, some friends of Mr. Chahoon from Caughnawaga made the journey to the Falls of the St. Maurice and paid their respects. In the course of their visit, Chief Two-Axe, assisted by others representing the various nations of the Iroquois, honored Mr. Chahoon by adopting him as a member of this great tribe and conferring on him the title of Chief Grand'Père of Grand'Mère.

After the ceremony in the community hall the program was continued on the golf links, where a very interesting game was played. The contestants appeared in uniform of various and sundry character, mostly incompatible with the personality of the wearer and not always conducive to the winning of a beauty prize. To say the game was amusing is not exaggerating the case. Each player was allowed but one club, and one of the numerous rules deprived him even of that if he were found using it as a walking stick. Way stations for refreshment helped the weary players to make the round and they were further encouraged by the appearance on the far side of the links, of the Fiske Jubilee Singers, whose melody soothed, inspired, and entertained the party.

A Visit To The New Mill At Three Rivers

Since the Technical Section had the pleasure of visiting the new mill of the St. Maurice Lumber Co., the subsidiary of the International Paper Co., at Three Rivers, many changes have taken place. The clutter of mill construction is all cleaned up and the mill presents a most attractive appearance in its commanding situation; the junction of the St. Maurice and St. Lawrence Rivers and the excellent job of brick work is very pleasant to see.

At the time of our visit a year ago, only the wood preparing plant and the sulphite mill were in operation There is now a duplicate block pile with its big stacker convenient to the groundwood mill and the wood yard is well supplied with clean 4 ft. wood. The company is exceedingly well favored with respect to wood supply through its large holdings of free hold land as well as crown land licenses. All of this wood is within a one season drive of the mill and has been so well protected from fire that there has been practically no loss on this account. Mr. Grant, the veteran manager of the St. Maurice Lumber Co., who is responsible for the supply of pulpwood to the paper mill, feels confident that with as good care of the limits in the future there will be no fear but that nature will furnish all the timber that the mill will ever require.

The Groundwood Mill

The groundwood department is housed in a separate building. It is entirely of brick and concrete and besides containing 14 magazine grinders, is unique in having some of the finest work in reinforced concrete that will be found anywhere. We have seen stock channels and pits of concrete in other plants but have never before seen perfectly formed decker vats.

The wood is brought by a conveyor to the top floor or charging floor above the grinder magazines where two distributing conveyors carry it the length of the building and pile the blocks convenient to the grinders. The magazines are closed by nicely balanced trap doors.

The grinders are set in pairs each driven by a synchronous motor and the sharpening device on each stone of the pair is operated by an hydraulic cylinder between the grinders. The type of magazine developed by the Waterous Engine Works Co., provides a separate magazine for each of the two pockets of a grinder and these magazines may be swung open by jaws to permit the convenient lifting out of the grindstone when replacement is necessary. The stock from the grinders all passes into a common stock channel in which there is an inclined sliver screen and there seem to be very few slivers in the pulp. This channel delivers the slush to a pump which elevates it to the knotters, a battery of which are located on a platform in the screen room. From these the stock flows over a riffler which is a rather uncommon refinement in a wood mill but it shows the care which is being taken by the company to produce the highest grade of pulp and paper. The rejections from the knotters are re-screened and the fine fiber joins the stock from therifflers and passes to the fine screens. The rejections from these together with the rejections from the second knot screens are refined together with rejections from the sulphite screens for use on the wrapper machine. The accepted stock from the fine screenings is thickened in the deckers whose vats as mentioned before, are moulded of concrete and the thick slush drops directly to the groundwood storage chamber which forms the whole basement of the screen room and from which it is pumped directly to the paper mill.

The sulphite mill was described in our issue of June 16th 1921 so it willsuffice to say that the sulphite stock required for the paper mill is pumped directly from the sulphite fine screns to a preliminary thickening device consisting of an inclined strainer covered with Fourdrinier wire through which a large amount of water drains off and from which the thickened stock goes to a thickener having three washing cylinders. This machine delivers stock at about 3 p.c. consistency to the sulphite pit.

A Consistency Regulating System

A portion of the sulphite stream is diverted through a Trimby automatic consistency regulator as it is being pumped to the Trimby and Allen mixing system. The groundwood stock is regulated in a similar way so that the parts as mixed for the paper machine each contains constantly and exactly whatever percentage of stock is desired. This is usually 3 p.c., but will have to be the minimum received by the pump as the regulation is effected by the addition of more or less water at the pump intake.

Panorama of Newest Newsprint Mill.
Wet Machine Room — Sulphite Mill — Ground Wood Mill.

The mixing system is a device which by means of float valves maintains a constant flow of regulated stock from the pumps and by getting a constant head there is always the same amount of each stock delivered to the paper machine according to the size of the opening through which this stock flows. The opening from each reservoir of pulp is regulated by a vertical gate which controls the amount that can be delivered while a horizontal divider permits the opening of one and the closing of the other according as the proportions of sulphite and groundwood are to be changed. As the pulp stream emerges from this regulating valve the proper amount of color and alum together also with size or clay if this is used, is added in a carefully regulated stream and the whole is thoroughly mixed in a special chamber. The single fan pump in place of the cumbersome plunger pumps, usually employed conveys this accurate mixture of stock to the regulating box of the paper machine. The only function of this box is to furnish the right quantity of this mixture of uniform consistency to the screens and this is readily done by the adjustment of the gate.

A Fine Paper Machine Room

The paper machine room houses 4 Bagley and Sewell machines each 164'' wide driven by the General Electric type of sectional drive. The room is divided down the centre, with 2 machines in each part but with large connecting passages at each end of the machines. The machines are all alike and certainly make a most attractive department. Each has a 100 ft. wire, suction couch roll, granite top rolls on the 3 wet presses with a reverse of the paper at the last press. Automatic carriers take the paper over the driers.

There is one 10 roll stack of calenders, English or surface type of reel and drum winder.

A fifth machine at the wet end of the machine room has been installed for the manufacture of mill wrappers from ground wood and sulphite screenings. This machine consists of a Rogers wet machine for the wet end by the Dominion Engineering Works. It will have a of the usual type of dryers etc., which were furnished capacity of about 20 tons a day whereas the paper machines are rated at 60 tons at a speed for 800 ft.

All broke is sent through chute to the basement where it falls into boxes that are carried by an electric truck and dumped into the broke beater.

The finishing room occupies the east end of the machine room building from which the paper is loaded into freight cars on the company's long siding. This siding passes the groundwood and sulphite mills and the wet machine room and serves both for the bringing in of raw materials and the shipping of finished product from each department.

Work is now under way on the installation of a Kaelin electric boiler which will very largely provide for holiday and Sunday steam requirements and add another feature of economy to what is at the present time generally considered to be the best arranged mill on the continent for economical operation.

The company is to be heartily congratulated on the success of their operation and on the very attractive appearance of the whole plant.

The barriers are not yet erected which shut out aspiring talent.

NEW BRUNSWICK FREE FROM FIRES

The Province of New Brunswick has been practically free from fires this year. Conditions were becoming hazardous in the southern part of the province the first few days in May, but heavy rains on the 6th changed things for the better. The most dangerous period occurred the last week in May, ending with a general rainfall on June 2nd and 3rd. Since then there have been several rains, everything is green, and the rangers report that there is considerable water in the woods. About half a dozen fires occurred the last week in May, the most serious of which occurred on June 1st near Chipman, about 1000 acres being burned over. The other fires occurred mainly on private land and were promptly extinguished by the County Councillors and citizens of the municipalities affected. These are practically the only fires reported of any size and the total area burned is less than three square miles. The railroads have been practically free of fires and inspections have shown that the ashpans and front ends are in better condition than ever before.

Spring burning, which was closed off last year on May 10th, was extended this year to May 20th, and lately the rangers have been issued orders to permit slash burning under supervision. The last week in May was observed as fire prevention week throughout the province by Proclamation of the Lieutenant-Governor.

The school teachers were all circularized in May, while the teachers' association have taken up the matter of forest fire prevention direct. During the dry week in May the newspapers issued daily warnings regarding the hazardous conditions existing, while the smoky condition of the atmosphere for several days, the results of forest fires in points outside the province, was a great reminder to the people to be careful.

Five lookout towers covering the greater part of the forested area of the province have been in operation since the middle of May. Several railway patrolmen on hand speeders have been maintained on the Canadian National Railways.

The changes made in the N. B. Fire Law have met with the greatest success. Fires on privately owned lands, if not extinguished promptly by the owners, are promptly looked after by the County Councillors, who were appointed fire wardens, and who have the power to call out the necessary number of men to fight fire without pay. In cases where fires have occurred on private lands the Councillors have quickly summoned help and extinguished the fire.

Westmoreland County has a county Act this year. Here, the owners of forest land of fifty acres or more elect Chief Wardens and Deputy Wardens to carry on the work of fire protection, while the total expenses are pro-rated over the acreage of forest land protected, and collected by the County Council. This Act is also enacted so that it may come into force in any other County on application of a majority vote of the County Councillors by Order-in-Council. Thus in our settled counties where land is largely privately owned and more thickly populated the County Councillors may adopt the Westmoreland County Act, if they so desire.

According to an official report dealing with the import and export trade of India during last year the total imports of paper and pasteboard fell from 7.3 to 2.3 crores. This reduction was fairly equally shared by the principal sources of supply, viz.: the United Kingdom, Sweden, Norway, and the U. S. A. Germany is, however, once more becoming an important factor in this trade.

A Dictionary of Pulp and Paper Mill Terms

(continued from last issue)

Shell. The outer metal casings of refining engines, digesters and boilers.

Shell Bars. The bars attached to the inside of the shell of a refining engine. The shell bars are thus fixed and across them laterally the core or plug with its bars revolves. See **Refining Engine**

Shiners. Called also **Shine Spots.** Particles of filler, sodium silicate, calcium sulphate or other substances which are compressed to a translucent spot upon passage through the calenders. Hard brittle materials fall out and make pinholes. In sulphite pulp the bundles of fibers seen in undercooked pulp.

Shives. Slivers of wood and bark showing in sheets of pulp or in finished paper.

Shrinkage
(1) Loss of materials in the course of mill operations.
(2) Loss of weight in handling or or transit usually due to moisture conditions.
(3) Decrease in dimensions of paper on drying or felts on wetting.

Silver Tissue. Tissue used for wrapping silver, made of rag or wood pulp. Must be free from acid or sulphur compounds

Sisal Hemp. A Mexican variety of aloe, ..**Agave Americana.** Cord is made from the fibers of this plant, and it is therefore found in paper stocks. Old cordage is raw material for strong papers.

Size. A gummy or gelatinous material used in textile industries to prepaper fibers for subsequent processes and to give improved finish. In paper making, size is used to make paper more or less impervious to ink or moisture—i.e. hard or slack sized—and to prevent fuzziness. Long beaten paper is partially sized by the hydration of some of the cellulose to a semi-gelatinous material. The common paper mill sizes are gelatine and a rosin soap that contains much free rosin. Alum is used to break up the rosin soap, causing rosin to stick to the fibres.

Size Cutting. The act of adding alkali (soda) to melted rosin in making size, which forms sodium resinate or rosin soap.

Sizing. In paper making, treatment which results in making paper impervious to ink in varying degrees as required. Sizing has the effect also of adding to the strength of paper by increasing the friction between the fibers. The sizing compound is either added to the beater (engine sizing) or applied to the surface of the nearly dried sheet by passing it through a vat (top or tub sizing.)

Slack, Loose; not under strain.

Slack-Sized. Paper in which very little size has been used.

Slake. To add water, as in the case of lime, forming th hydrate from quick-lime; often incorrectly written **slack.**

Slaked Lime. Calcium hydrate (or hydroxide), the result of treating quicklime with water. Lime is sometimes said to be "air" -slaked, in which case both carbonate and hydrate are formed by reaction with the carbon dioxide and moisture in the atmosphere. Incorrectly referred to as slacked lime.

Slasher. A gang of circular saws, set in a suitable platform for cutting logs into blocks.

Slices. Bars extending across the wire, just over, or a short distance in front of, the breast roll. Their function is to regulate the thickness of the stream of water and half stuff flowing into the wire, and to maintain a satisfactory depth of pond, which see.

Sliding Friction. The friction in ordinary bearings; sliding friction is greater than rolling friction, hence ball and roller bearings—which are thus changed into cases of rolling friction.

Slipped roll. A roll of paper which has slipped off its core or which has had its core pushed out carrying the roll to a cone shape or "pencil point."

Slitters. Knife-edged discs mounted at the winder end of the paper macine, movable horizontally, used to cut the sheet to required sizes as it runs off the machine. Also refers to special apparatus for cutting and rewinding.

Slivers. Small particles of uncooked wood showing in paper, also long ribbon-like chips formed by glancing stroke of chipper on under side of block in chute, indicating, when numerous and long, that there is excessive clearance between disc and chute.

Slow. Paper stock is said to be slow when as a matter of long beating or other modifications of process, it parts with its retained water slowly on running over the machine wire. Also called shiny, greasy or wet.

Slush. The ground pulp with water, leaving the grinders in a ground wood mill. Wood pulp mixed with water.

Smalts. A pigment obtained by grinding a blue glass, which has been colored with cobalt silicate. The color is very permanent, but the pigments is expensive on account of its low coloring power, and indifferent reduction.

Soda. Properly, sodium oxide, Na_2O. Often used in referring to other alkaline compounds of sodium, such as sodium hydroxide, or caustic soda; sodium carbonate, or soda ash.

Soda Ash. See **Sodium Carbonate.**

Soda Mill. An establishment where wood is treated by the soda process, producing soda pulp.

Soda Process. A means of producing wood pulp by heating it under pressure with a solution of caustic soda. The cooking liquors are recovered, evaporated and burned to sodium carbonate, which is then dissolved and causticized with lime for further use. Poplar, birch, bass, cottonwood and other hard woods are treated by this process.

Soda Pulp. Fiber cooked by the soda process, usually poplar, birch, beech, bass, chesnut, or other decidious woods, sometimes spruce and hemlock.

Sodium Arsenite. $Na_2\ H\ As\ O_3$. The solutions of arsenious acid, accomplished by boiling it with sodium carborate, contain the compound, sodium arsenite; hence these solutions are known as sodium arsenite solutions. They are used to determine the strength of iodine solutions.

Sodium Bisulphate. See **Niter Cake**

Sodium Bicarbonate. $NaHCO_3$. Baking soda, or saleratus, an alkaline compound used in dry fire extinguishers, and sometimes to prevent mould in timber.

Sodum Bisulphite. $NaHOS_3$. Sodium acid sulphite, a bleaching agent used in groundwood pulp bleaching. Also used as an antichlor.

Sodium Carbonate. $Na_2\ CO_3$. Found in the crystalline form as washing soda or sal soda—$Na_2\ CO_3\ 10\ H_2O$ (an efflorescent salt, losing 5 molecules of H_2O at temperatures over 55° F.). Soda Ash is sodium carbonate in the dry form. It is usually rated on its content of sodium oxide, Na_2O, which would be a little over 58 per cent. if the carbonate were pure.

Sodium Chloride. Common salt, Na Cl Used as a raw material in electrolytic bleach plants as a source of chlorine and soda.

Sodium Hydrate. See **Sodium Hydroxide.**

Sodium Hydroxide. NaOH. Also called sodium hydrate and caustic soda, a strongly alkaline, corrosive, deliquescent compound; the active component of cooking liquors in both soda and sulphate processes.

Sodium Hypochlorite. Na O Cl. The active bleaching agent in javelle water and Labarrague's fluid. May be obtained from sodium chloride by the action of the electric current. In javelle water it is obtained by treating bleaching powder with soda ash and allowing the resulting carbonate of lime to settle.

Sodium Peroxide. $Na_2\ O_2$. A powerful alkaline oxidizing and bleaching agent, sometimes called "oxone." It must be kept away from water. The great heat produced when water comes into contact with this compound is liable to cause fires or explosions. It is highly corrosive and must be handled with care.

Sodium Silicate. Often called "water glass," "soluble glass," and sometimes "glass water." Compounds of sodium and silicic acid, having the formulas (a) $Na_2 Si O_3$; (b) $Na_2 Si O_3 9H_2 O$; (c) $Na_2 Si_4 O_9$. They are probably present in varying and indefinite ratios with water. Usually found as a syrupy fluid, also as a solid and and in granular or powdered forms. Used in digester lining cements, for fireproofing, as an adhesive for boards and an adjunct in sizing paper.

Soft Roll. A roll of paper badly wound. It may be soft in spots or entirely across the roll.

Soft Sized. Paper containing very little size—not "water leaf," which contains no size.

Solder An alloy of lead and tin used to seal contacts or for repair work. Best proportions for practical purposes are half and half, which melts at 188° C. Solder for brass or copper contains two parts of lead and five of tin, and melts at 170° C.

Soluble Blue. Soluble form of prussian blue, also some coal-tar colors.

Soluble Glass. See **Sodium Silicate.**

Sorter Number. Pencil marks on corners of reams giving number of sorter, for use in case of complaint or defect.

Spiral Laid. A dandy roll in which the laid wires are ranged in the form of a kelix. Ordinarily, the laid wires run from end of the roll. The sheet flows under a spiral dandy with less resistance, consequently the finished paper has a distinctive appearance.

Soluble Starch. Starch which has been heated with glycerine, to which also alcohol is added while cooling. Used as an emulsifying agent in textile industries and as an indicator for iodine.

Sour. Acid used either to accelerate bleaching—as sulphuric—or to produce an acid bath in dyeing, for which acetic is used, "to sour" is to treat with weak acid, as in cleaming a dandy roll or wire.

Spanish Grass. The highest grade of esparto. **See P. 605.**

Spar.

(1) A term used in mining for any glittering mineral, in some cases referring to calcite, carbonate of lime as calspar, or to mixtures of silicates of aluminium, soda and potash, as felspar. Iceland spar is a form of calcite having peculiar reaction with light rays, hence is used in polariscope work.

(2) A round piece of timber, as the yard or mast of a sailing vessel, or the arm of a derrick.

Specifications. The stated sizes or limits of machinery or construction work, or the tests of strength and quality which a product must comply with to assure purchaser, engineer, inspector or other interested party that the building, machinery or product will serve its purpose, satisfactorily.

Spreader. A roll of comparatively small diameter on which a strip of felt is spirally wound. The spiral begins at the center the roll and runs out to the ends. Press or other felts carried on this roll will thus be kept from crowding to the center. A bar bent slightly bow shape to spread or separate the strips of paper coming from the slitters so as to prevent the rolls from interwinding at the edges

Spruce. Several species of coniferous trees: Black Spruce, Picea Mariana; Blue Spruce, Picea Parryana; Engelmann Spruce, Picea Engelmanni; Red Spruce Picea rubens; Sitka Spruce, Picea sitchensis; White Spruce, Picea Canadensis. All these species have been used for pulp making by all processes—the black, red and white spruce in the Eastern parts of North America and the Engelmann and Sitka on the Pacific Coast.

Spur Gear. A gear drive in which the driving planes are parallel, as in clock work. The axes of their shafts are also parallel, though at right angles to the driving plane.

Stannous Chloride. See **Tin.**

Starch. A compound occurring in most seeds, containing the fuel energy for the growth of the germ in the soil. It is a carbohydrate with the formula $(C_6H_{10}O_5)n$. It is, therefore, isomeric with cellulose. The chief commercial sources of starch are wheat, potato, corn, rice and tapioca. Starch occurs as minute cells differing in size and shape, wheat and potato being quite large as compared with corn or tapioca starches. Upon heating to boiling the cells burst and form a mucilaginous mass. Starch is used as a sizing adjunct in paper. It also helps to keep the stock in a colloidal condition in the beater, thus making a slower stock on the wire and tending to improve the formation of the sheet. It is said to give a better finish and improve the cutting qualities of paper for special purposes such as envelopes.

Steam Trap. A device whereby condensed water is eliminated from the steam system while preventing the loss of steam that would take place by open exhaust.

Stipa Tenacissima. See **Esparto.**

Stock. Term used for half-stuff, stuff or wood pulp running to machines; practically any fibrous pulp suspended in water used, as rag stock, sulphite stock, paper stock, etc.—as well as its usual reference to supplies or product on hand.

Stone. The circular grindstone used for making ground wood, which see, also "grinder".

Straw. The stems of various cereals used for paper making. Wheat is most frequently used. Rice straw makes a very fine short fiber for special purposes.

Straw Board. A coarse box or packing board made from straw after very incomplete treatment.

Straw Pulp. Prepared by cooking straw with soda or lime. The treatment may be very light for coarse pulp, as boxboard stock, or quite drastic for pulp to be bladed and used in fine papers.

Stretch Roll. There are several of these, on the paper machine. They are rolls of small diameter. Felts or wires run under or over them and they can be moved forward or backward, up or down to take up slack or increased tension.

Stuff. The prepared mixture of fiber, etc., ready to run out on the wire of the machine.

Stuff Chest. The supply chest provided with an agitator containing prepared stuff for the machine. It may be horizontal or vertical.

Stuff Pump. Pump for supplying stuff or stock to the paper machine, screens, or chests.

Suction. An effect produced by withdrawing air from a closed space by air pumps or other appropriate means; atmospheric pressure then operates on the outside, as in pushing water from the sheet on the proper machine wire.

Suction Box. An oblong box extending the full width of the machine wire and over which the wire passes. It is closed on three sides, but the top over which the wire passes is perforated. Air pumps are connected to pipes at the end of the boxes, and the suction produced acts to draw water from the partly formed paper passing over it on the machine wire.

Suction Couch Roll. A couch roll (c.f.) fitted to act like an additional suction box by means of a perforated surface which is only in action at the portion of its periphery in contact with the sheet of paper on the wire

Sugar of Lead. See **Lead Acetate.**

Sulphate of Alumina. See **Alum.**

Sulphate Process. A process for cooking wood chips to produce pulp, by cooking under pressure and at high temperature in a solution of caustic soda. After the cooking is completed the liquors used are recovered by evaporating and burning. The resultant ash is carbonate of soda and must be causticized by treatment with quicklime, when it is ready for further use. There are losses of soda in the cycle, and this is made up by adding sulphate of soda. Sulphur compounds are thus introduced and, by reduction in contact with growing carboneceous matter, sodium sulphide, which increases the effectiveness of the cooking liquor and incidentally gives rise to organic sulphur compounds leading to the disagreable odors associated with this process. This process is effective for many grades of wood, especially the highly resinous Southern pines.

(to be continued)

Co-operative Competition and the Service Assocation

By T. J. Burke, C. A. Secretary-Treasurer, Cost
Association of the Paper Industry.

There are four service associations affiliated with the American Paper and Pulp Association, i.e., Technical, Superintendents, Salesmen's and Cost. For some reason unknown to me, the purchasing agents have not any association. During the joint convention held by the Superintendents and Cost Association at Kalamazoo recently, one of the executives present stated that in his opinion it would be desirable if such an association were formed.

But to go back to the service associations now in existence. Undoubtedly the closer co-operation there is between these four service associations in their work, the better will be the results which will be attained. Co-operative competition is to take the place of the old "cut throat" kind, as is clearly foreshadowed in an address given by the Hon. Nelson B. Gaskill, Chairman of the Federal Trade Commission on June 8th in Chicago before the National Association of Wholesale Grocers on the subject of "Some Aspects of Price Cutting." One very significant passage of this address reads as follows: *"Because I believe that selling below cost is an unfair method of competition I believe that a group agreement not to practice this method of doing business is a lawful agreement."* Mr. Gaskill also refers to an address which he wrote at the request of this Association to be read at our convention in Chicago in October last year as follow: "In an address delivered before the Cost Association of the Paper Industry, October 7, 1921, I advanced the proposition that each individual business unit should ascertain its own cost and fix its own selling price with due reference thereto. I urged upon trade associations the opportunity and the necessity for education in cost accounting methods among their members. That argument is a necessary element in the proposition which I am stating here. Unless cost is known, profit is unknown, and whether a selling price is below cost is a matter of guess work. The business man who fixes his selling price without accurate knowledge of his production cost and without keeping above it is on an industrial joy-ride. He is not only in peril himself but *he is a constant source of danger to others."*

This address of Mr. Gaskill's contains many other very significant paragraphs which all lead to the conclusion that the Chairman of the Federal Trade Commission is convinced of the great harm that is being done to industry throughout the country by manufacturers who ignorantly sell their products below cost. His address is certainly a clear indication of the necessity for the work which the Cost Association is endeavoring to carry on and copies of it will shortly be distributed by us.

The four service associations must therefore draw closer and closer together in their endeavor to promote manufacturing and selling efficiency because the time is undoubtedly ripe for bringing about the desired results. The Cost Association forsaw the necessity for this co-operation when last December it approached the Technical and Superintendents' Associations with a suggestion that the three Associations should hold a joint convention. Unfortunately the Technical Association had already made arrangements for their spring convention so was not able to accept this invitation, but after certain preliminary arrangements had been made, the Superintendents consented to hold such a convention, provided the Cost Association would be willing to again go to the Middle West and meet with them at Kalamazoo on June 1st, 2nd and 3rd. Being fully advised of the importance of gaining the good will of the operating men if accurate cost figures are to be obtained, the cost men decided to do this, although it was the turn of the East for the convention. The action taken was, however, fully justified by the great success which attended the joint convention.

The four speakers selected by the Cost Association to represent them in the joint sessions were Geo. A. Galliver, President American Writing Paper Co. C. Oliver Wellington, C. P. A. of the firm of Soowell, Wellington & Co. W. G. MacNaughton, Secretary-Treasurer, Technical Association of the Pulp and Paper Industry (who was selected because we wished to emphasize the importance which we attach to the work of the technical men in the industry) and Jas. A. Reilly, Manager Cost and Inventory Department, American Writing Paper Co.

The addresses given by these gentlemen were of the highest order and undoubtedly contributed a great deal to the success of these joint sessions. Another good speaker who was, however, selected by the Superintendents, was J. H. Slater, whose address should be read by all superintendents and cost men.

The significance of the joint convention lies in the fact that it was the first attempt that has been made by any of the service associations to get together in this manner. We feel sure that it is the forerunner of a good many other similar conventions which can only be productive of the greatest amount of good in the industry. We understand that arrangements are already being made by the Technical and Superintendents' Associations to hold a joint meeting this fall.

I confess that during the convention I was struck by the very real interest shown by the superintendents in the efforts being made by the cost men to place squarely before them the facts regarding cost statements and their significance both to the operating men as well as to the executives. I believe that as a result of the convention a large number of superintendents will co-operate much more closely in the future with their cost departments because some of the best among them went on record as being unequivocally convinced of the benefits which they had derived from the statements and reports which they had been in the habit of receiving from their respective cost departments.

Paper is made on expensive machines after somewhat unusual manufacturing processes, and it is *not* an easy matter to keep a close check on the manufacturing costs. It is only within recent years that a real effort has been made to ascertain these costs. Prior to this the Superintendent made paper as cheaply as he knew how and had no other guide but his own good common sense as to whether there was any great waste in the mill. All this has now been changed and the Superintendent's work made correspondingly easier. The superintendent nowadays who does not take full advantage of the information given him by the technical and cost man is undoubtedly at fault and this will become increasingly apparent as competition becomes keener, as it will do, year by year, for several years at least.

It was clearly brought out at this Convention that it is certainly the superintendent's duty to see that the men under his control in the mill are trained to properly fill in the cost records which will enable the Cost Department to accurately compile the costs as well as to make prompt reports regarding the efficiency or otherwise of the various department in the mill. If a superintendent co-operates closely with the Cost Department in this manner he will in turn undoubtedly receive very valuable data from that department which will assist him materially in "carrying on."

Therefore we believe that the joint convention held at Kalamazoo by the Superintendents and Cost men was a great step in the right direction because in future any superintendent who desires information on cost matters will feel free to write to the Cost Association as to a friendly organization which is only too anxious and willing to assist him in his work to the best of its ability.

British Trade News

(From Our London Correspondent)

London, July 4, 1922

I have just witnessed an amusing incident right in the heart of newspaperdom. On a large steam tractor reels of Newfoundland newsprint were being rushed up to one of the big newspaper offices and as the paper passed along through the streets people shouted: "Your paper is on fire behind," to the driver. He took no notice, treating such remarks as as joke, but at last there came a time when he began to feel uncomfortably hot. Casting his eye round for the reason, he discovered that the rear portion of the tractor was well alight and that the paper was commencing to smoulder. The driver immediately drove the tractor to a near-by fire station and called out the firefighters—who were amused at the thought of a fire being brought to them o be put out. However, a line of hose was put on the tractor, the fire subdued, and the paper badly damaged. The end of a "Perfect Day".

Synopsis of Trade

Last week I commented on the financial results of Wiggins, Teape, & Co. (1919), Ltd., and since then Mr. P. W. Holden, the President, has presided over the annual meeting of the company. In a speech full of interest, he said that the company had come through a time of unprecedented depression and difficulty, which those not connected with the paper industry would hardly be able to realise. The consumption of papers and goods which they manufactured, to a large extent ceased throughout the world owing the slackness of trade in general, and, in addition, most of the company's customers were caught with large stocks which had to be liquidated. From all that the company had suffered severely, but it was good to remember that the paper they manufactured was essentially a key commodity in the sense that customers and commerce could not exist without it. Since the last meeting of he company great progress had been made in the manufacture of photographic base paper. It was a new trade — a highly technical and scientific trade and one which had many sides to it. They had now got a mill in all essential features admirably suitable for the manufacture. Some grades that were being made were giving complete satisfaction to the customers—grades which they could not make formerly, and which came from foreign sources. Other grades had yet to be improved but the company had ruining orders in hand which they were able to make and sell at a profit, and he could speak hopefully of the prospect of this branch. Of course, the photographic trade had suffered like most other trades from the general depression — especially the professional trade — but on the other hand, he believed that photography, as applied to advertising, was only in its infancy. Much of their base paper was used for that purpose and he had great faith in the future.

Mr. L. W. Farrow explained that, in connection with the fall in stock values, on 1921 the company held stocks and had commitments of wood pulp bought at £86 a ton, and the market price fell to £22.

Rubber Latex in Paper

Some time ago I referred to the employment of rubber latex in paper. The subject has since received considerable attention and additions published to Professor Kaye's experiments. Messrs. Bertrams, of Sciennes, Edinburgh, the paper machine manufacturers contribute an article to "Tropical Life" a copy of which has been sent to me for the readers of the "*Pulp and Paper Magazines*", in which they say "we do not know that the use of latex in actual papermaking will be very largely adopted, but it may come to be a big business in connection with special paper products. It is difficult to see how far an idea of this kind may go. There is no difficulty whatever in blending rubber latex and paper pulp. We made some samples a long time ago. We used only a small proportion of latex, but it had a great effect on the pulp. We also know that rubber and cork are used for producing linoleum. We have seen felt webs made of cotton and flax fibres with a proportion of latex. Someone patented, a little while ago, the use of latex in paper pulp along with some material to vulcanize the rubber. The samples we made we did not attempt to vulcanize. We simply left the rubber in its natural state. No doubt vulcanizing would do good for a great many purposes.

Pulp from Canada

A little over 4,500 tons of chemical pulp has reached England for the Imperial Paper Mills, in Kent. A shipment from Chicoutimi totals 3,057 tons groundwood. It is very pleasing to see shipments like these coming into England from the Dominion. The groundwood is valued at £15,285 and the chemical at £25,830. This is something "to write home about".

Mill Picnics

This is the time of year the mill manager and the workers meet on common ground. At most of the mills, arrangements are being made for the summer outing to some resort and it is usually a great time for enjoyment. Dressed in their best Sunday clothes, the workers go off to forget mill worries and the managers help the preceedings of the day with a meeting round the festive board, at which in Scotland and Ireland Jameson and Johnny Walker's whiskies are carefully doled out, in England and Wales light dinner beers, and in South England, cider. These "beverages" help to break down the montony of the old saying that "too much familiarity breeds contempt"; in other words work is left at home for the time being.

Good News

Box makers and makers of paper containers report that business is good and plenty of orders are flowing in to the mills.

Strawboards

Some time ago I drew attention to the monopoly the Dutch enjoyed in the British market of Strawboards. For years the surplus straw in Canada has been discussed in connection with Strawboard making and it is interesting to note that Dutch are now asking $9 extra a ton for their products.

Some Easy Practical Paper Tests*

By NORMAN A. ALTMANN

Chemist, Butler Paper Corporations, Chicago.

The microscope is probably the greatest single instrument in the paper testing industry. With a microscope on an uncoated paper we can tell the printing surface, we can get some idea of the air volume of the sheet or the space in the sheet not occupied by fibers. With the coated papers, we can get some idea of the quality of the coating, the question as to whether the color is well mixed, has an even flow, whether the coating contains many pin holes and whether it is too rough to take the proper screen.

Besides this, after the paper has been defibered and we prepare a slide with a staining solution, such as the Herzberg stain, it is possible to determine within probably 5 or 10 per cent of what the sheet is made. It is also possible to determine the amount of beating the fibers have received, whether free or greasy, and finally in the analysis of the loading materials the microscope plays a great part in their identification.

When I speak of these so-called laboratory tests, I mean tests conducted under ideal conditions, whereby the paper is favored in every respect; that is, the humidity is kept from 60 to 65 per cent, the temperature at 75 degrees F., and the papers allowed to adjust themselves by remaining in the room overnight. The chief objection I have to testing under these conditions is that a paper is seldom allowed to perform under those conditions. Tests we have conducted in print shops have revealed that the humidity in the winter months is as low as 15 to 20 per cent, and that a paper which is O. K. under higher humidity sometimes fails under these conditions. Therefore the whole proposition resolves itself into the fact that the paper must be constructed for this low humidity, and tests at a standard humidity are not accurate for conditions under which the paper is used.

We have therefore adopted the method of determining as nearly as possible the actual humidity conditions found where the paper failed and applying these to the paper, finding out why the paper was wrong under these conditions, and then working this out with the mill, because after all, the printer and user of paper has to have a satisfactory delivery under his average conditioons. Of course any abnormal conditions he has which tend to destroy the paper we do not hold against the paper.

In conjunction with these laboratory tests, there are a good many easy and practical tests to apply to paper. Of course, after a paper has failed, a checking-up of laboratory tests is of the greatest value.

The tests for groundwood papers are to determine their discoloration in medium strong daylight by exposure, and the use of a solution of phloroglucine or aniline sulphate to determine the groundwood content. The phloroglucine when applied to these papers will give a red coloration, while the aniline sulphate will give a deep yellow. Both, if the colorations are pronounced, termine the presence of groundwood.

Be careful when applying the phloroglucine test to a sheet of India colored paper, as there is an aniline dye (metanil yellow) used which turns red when it comes into contract with the acid in the phloroglucine and misleading results are likely to occur.

On the book papers free from groundwood, of course, unless a high percentage of unbleached sulphite has been used, they will discolor by daylight only very slightly over a long period of time and will not become brittle.

To determine the composition of such papers is a performance that can only be accomplished in a laboratory. However, the detection of unbleached sulphite, as well as the use of reclaimed book paper stock can be fairly well determined by phloroglucine, since it is rarely that a mass of magazine stock is reclaimed without very small traces of groundwood. Upon the application of phloroglucine in both the unbleached sulphite and old paper stock cases, these small groundwoods, fibers and unpurified fibers, such as shives, etc., will give a red coloration, and will show up distinctly in the form of individual fibers. A small amount of practice will enable one to determine this fairly accurately.

The grain in a book paper can be determined by:

1.—Tearing the sheet.

2.—Cutting out a small circle and laying it in the palm of the hand. The paper will always curl around the axis, parallel to the grain, or machine direction.

3.—Or it can be told very easily on the Mullen Tester by looking at the lines of rupture, the grain being parallel to the long rupture.

The sizing of book papers, in the case of starch can be easily determined by immersing a strip in a weak solution of iodine, dissolved in potassium iodide and water. Starch will give an intense blue reaction. The rosin sizing can be determined in two ways:

1.—By dropping some ether on the surface; this dissolves the rosin, and upon drying will subsequently form a brown colored ring at the edges of the ether.

2.—By a drop of concentrated sulphuric acid, with a few crystals of sugar dropped into it, if rosin sized it will give a raspberry red coloration.

In the coated book papers, the best test of all for printing surface is a small magnifying glass of about 25 to 30 magnifications which will enable the user of paper to determine the smoothness of the surface and its freedom from small indentations which are liable to interfere with the half-tone dot.

An easy test for casein is to smell of the sheet. Casein can be detected by the odor. A silver coin will make a black mark. If a confirmation of this is desired, a drop of Milton's Reagent placed on the surface and held over heat will develop a brick red color.

The detection of clay, satin white and blanc fixe is best accomplished in a laboratory. However, the detection of starch in the coating is again determined by the iodine solution, and calcium carbonate is also easily determined by dropping some dilute hydrochloric acid on the surface of the paper, and if an effervescence takes place a carbonate was used.

It is sometimes desirable to test the opacity of a sheet of paper, and an experienced man can do this by laying two sheets of paper over a dark object and comparing the visibility of the object, but a better test is to cut two holes in a cardboard and set this in front of a light, and then by laying successive sheets of paper of the same thickness over each other the one which obliterates the light first is, of course, the most opaque.

Of course, you all know the test for coating, which is simply moistening your thumb, pressing on the surface of the paper, and pulling your thumb away. If the coating without the fibers adheres to the skin of your thumb your coating is weak. This will give you an approximate idea of what the paper is liable to do in the press room.

There are times when a sheet must be waterproof, and this can be determined by moistening your sheet with the tongue and running it over a black cloth. If the coating shows up white on the black cloth your sheet is not waterproof. If no coating comes off, your sheet is O. K. There are some items where a coating has to be only partially waterproof, for instance for label purposes. Put a drop of water on the surface of the paper, rub around lightly.

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* An address before the National Association of Purchasing Agents, Rochester, N. Y., May 18, 1922.

If the coating is readily soluble you will notice a resolution of the coating in the water. This will give trouble when the girl tries to smooth the label on the can, as the printing and coating will generally wipe off. If your coating is reasonably hard under this test it will work successfully.

Determination of the value of a folding enamel can easily be accomplished by taking a 6″ square and then folding it, pressing the crease with your finger nail, and then running it over a sharp corner again. Continue this reversing until the sheet is broken. By doing this in both directions and comparing your results, you can determine the best folding enamel.

An easy test for sizing of different sheets is to lay one on top of the other and running the tongue, moistened with saliva over both of them and noting the rate at which the saliva penetrates the sheet. The sheet which dries the quickest is, of course, the least sized. (Another test is to float a small piece of each paper on a saucer of ink. Spots will show through first on the least sized sheet. Ed.)

There must always be a bond which will furnish an absolutely permanent record for the organization. Such a bond must either be 100 per cent rag or not less than 70-75 per cent rag, the remainder being extra No. 1 bleached sulphite. A bond also is sold on its strength, its permanency its cleanliness, snap, attractive watermark, finish, opacity,

It is easy to test your sheet for cleanliness and finish. Depending, of course, upon the price you paid for the paper will be its cleanliness. A high grade bond should have very few dirt specks. Its opacity can easily be determined by laying two sheets over some black printed matter as explained before, its sizing, whether it is tub or beater sized, can be determined by tearing the paper and applying a dilute iodine solution to the tear. If the paper has been tub sized, the outside of the sheet will be stained blue, while the inside will either remain white or will give only a slight blue reaction. (We consider this test as possibly misleading, many papers contain no starch.—Ed.)

The finish can be determined by looking at the sheet. This is something that is a personal proposition with each man and should be left to his judgment. The strength or wearing quality of a bond can be determined by tearing or crumpling, and it is very easy to tell the felt side even though no wire marks are visible. There are times when looking at a sheet of paper—this applies to book as well as bonds—that it is hard to see the wire mark, particularly if this paper was made on a fine mesh wire on the paper machine and has received a high finish. Sometimes by dipping the paper in water and allowing it to dry, the natural movement of the fibers from their pressed together position will allow the wire marks to come out very plainly, but in a bond paper if you will look at the watermark, run your finger over the mark and determine which side has the depression from the thinning of the fibers, the opposite side of this side is the felt side of the sheet. Here again the tests we have mentioned above are a few which will help you in analyzing your paper approximately, but it is best to go to a reputable laboratory if you wish to know something definite about the fiber content of a sheet or some other property.

All the above tests for bonds apply to the ledgers as well. These papers are almost identical, with the exception that quite a bit of attention should be paid to the tub sizing, in that it does not have an offensive smell which sometimes develops in warm weather, and the sizing should be hard enough not to soften on humid days, causing the pages to stick together.

To determine the number of pastings in welding bristols, burn one corner of the sheet and the layers will part. This test cannot be used with the machine pasted bristols.

To determine whether a bristol has been tub sized or not, the iodine test can be applied again by tearing the sheet in two, the same as bonds. The blue reaction will denote the starch sizing in combination with gelatin or glue.

To determine the number of plies rapidly, tear the bristol and apply the iodine to the tear. Bristols are generally pasted with some form of starch which gives a blue reaction with the iodine, and the different plies will stand out distinctly. This test applies as well to cardboards and blanks as long as the adhesive material is some form of starch paste. However, in case the adhesive is silicate of soda, the number of thicknesses can be detected very easily under the microscope, by cutting an end section of the board and magnifying it slightly where it will be noted that the silicate coming into contact with the two sides of the paper pasted together has discolored the surrounding fibers to a dirty brown, and the pastings can be distinctly counted.

However, by far the best test for determining the number of thicknesses in a bristol board is to soak the pasted board, bristol or blank in a weak solution of caustic soda. After allowing the solution to penetrate through the entire sheet, it is merely necessary to take a needle and pull the different layers apart and this will tell the entire story of a piece of board.

SPANISH RIVER HAS BIG POWER AT SMOKY FALLS

Percy B. Wilson, vice-president of the Spanish River Pulp & Paper Company, in a letter telling of that company's Smoky Falls power development, says:—

"The new power development is for 10,000 h.p. at Smoky Falls, about eight miles above our mill at Sturgeon Falls. The initial development consists of two units of 2,600 h.p. each, while the power house has been completed for a total of four units. The power is transmitted to the mill at 22,000 volts.

"Smoky Falls has a natural drop of about 28 feet at a point about 14 miles above Lake Nipissing, where an island splits the river in two, offering a favorable site for a power development.

"Construction work was begun in May, 1920, and power turned on November 20, 1921. The power house is situated in the river bed in the South Channel, with the foundation on the solid rock. It is 114 feet long by 27 feet wide, inside dimensions, with a transformer and switching bay 13½ feet wide, running the whole length of the power house. Mooley patent spreading draft tubes are used. In the south channel a log chute with reinforced concrete drop gate is provided for log driving.

"Flood control is sufficiently provided for by the installation of two Tainter gates in the south channel and four in the north channel, each gate being 14 feet by 20 feet. In addition, 80 feet of spillway is provided. The water wheels were built by Wm. Cramp & Sons, Philadelphia, and are of a single runner vertical type, designed to give 2,000 h.p. under a 33-foot head at a speed of 138 r.p.m. The generators were built by the Canadian Westinghouse Company, and are each 2125 k.v.a. 50 degree rise, three phase, 2,300 volt, 60 cycle, 138 r.p.m., with Kingsbury Thrust Bearing and direct connected exciters.

"The Jas. O. Heyworth Co., of Chicago, was the contractor and engineer for general construction. The transmission line was built by Lang and Ross, of Sault Ste. Marie, Ontario, and the water wheels and governors were purchased by the Management Engineering and Development Company of Dayton, Ohio."

A section of 50 square miles of timber in Eastern Saskatchewan has been stripped of leaves by caterpillars.

PULP AND PAPER NEWS

Among those on vacation from Toronto offices are Mr. H. F. E. Kent, of the Kinleith Paper Mills, who will be at his cottage on Lake Simcoe; Mr. E. Gain, of the Ratcliff Paper Company, who will seek the quietude of Niagara on the Lake, and Mr. M. G. Cohen, of Levis, who is getting his coat of tan at the Muskoka lakes.

It is reported that caterpillars have stripped the foliage from 50 square miles of forest in Eastern Saskatchewan.

Forest fires are reported over a wide area. Some of these have already entailed serious losses.

Mr. R. S. Kellogg, Secretary of the Newsprint Service Bureau, was a visitor in Montreal this week.

The "New York News" is the appropriate name of the first of the boats ordered by the "Chicago Tribune" from the North of Ireland Shipbuilding Company, Londonderry. She, with the others, will convey pulpwood from Lower St. Lawrence ports to the Ontario Paper Company, Limited, Ontario. The owners have just taken delivery of the vessel.

Mr. Frank W. Clarke, president of the Gulf Pulp and Paper Company, Limited, P.Q., paid a brief visit to Montreal last week. He stated that the company has been very successful in shipping ground wood pulp to England early in the season, and that stocks had been cleaned up to a very considerable extent.

IMPORTANT AMALGAMATION

We are able to announce that the Lincoln Paper Mills Co., Ltd., of Merritton and the Canadian Pulpwood Corporation Ltd. of New York have been amalgamated successfully. The name of the new Company being, The Lincoln Mills Limited. The Canadian Pulpwood Corporation's limits are situated on the South Shore of the Gaspe Peninsula on the Baie de Chaleur.

This arrangement ensures a continued supply of pulpwood to the new concern, from its own limits.

We expect to have more detailed information in our next issue.

SAFETY ENGINEER HAS STEAMER THRILL

Mr. A. P. Costigane, Safety Engineer, has returned to Toronto from an extended trip covering mills at Dryden, Fort William, Port Arthur and the Soo.

On the return trip he was a passenger on the S. S. Noronic, which ran aground on a sand bank in a fog off Iroquois Point in Lake Superior. Despite the disquieting experience of a jarring stop, there was no sign of panic among the passengers. The vessel was delayed for twenty-four hours and after several tugs and a freighter had failed to move her, some 200 tons of freight had to be lightered off.

Mr. Costigane has no recommendations to make as to the elimination of hazards in Lake transportation, but doesn't enjoy being bunkered near a water hazard.

The department of the Spanish River Company looking after accident prevention work is in course of being expanded to include all the features of industrial relations. Preliminary meetings have been held and at the next meeting an organization scheme covering the system will be decided upon.

Safety work is going carried on with interest and in a satisfactory manner in all the mills visited.

NEGOTIATING WITH AUSTRALIA

Canadian paper mills are doing an extensive export business, especially with Australasia. Mr. W. A. Boucher, the managing director of Spedding, Limited, Auckland, New Zealand, is on a visit to Canada, with a view to securing agencies for paper and other commodities. While in Montreal he expressed the opinion that there were immense opportunities in New Zealand and Australia for Canadian productions provided that they were able to meet competition, which was keen.

Inquiries from Australasia are unusually numerous just now. Canadian paper companies have shipped considerable quantities of newsprint, writings, and printings, notwithstanding that as compared with Great Britain this country is under a stiff handicap in the way of duty. Canada has complained time and again of this unfair discrimination, and it is hoped that the Australian Government will remove the handicap. Nothing has been heard of the proposed trade agreement between Canada and Australia since Parliament prorogued, but at the opening of the Australian Parliament, which is now in season, it was stated that a trade agreement between the two countries would be one of the subjects to be considered.

Progress with the negotiations has been slow—there are many considerations to be taken into account. So far as the paper trade is concerned, Canadian producers claim that this country, as part of the Empire, should not be in a worse position than the Mother Country. We do not want to be treated as a foreign nation. The Canadian paper trade is desirous of securing a portion of Australasian business, but on terms which will enable competition on an equitable basis.

SALESMEN PLAN OCTOBER MEETING

The Chicago district of the Salesmen's Association of the Paper Industry has decided not to attempt to hold a summer outing, like those recently held at Boston and New York, but to concentrate their efforts on making the October meeting of the association a notable event. The meeting will be held Tuesday, October 17, during the Chicago paper week and fall business conference of the American Paper and Pulp Association.

The first definite step taken was the securing of Edgar A. Guest, the famous newspaper humorist and poet for the banquet the evening of convention day, and efforts are under way to secure some other notables for the banquet program, as well as for the sessions during the forenoon and afternoon.

The New York division's outing, July 12 at Malba, L. I., proved a great success, through the efforts of the special outing committee named by Vice-President J. Donald MacLaurin of the New York district. President H. H. Reynolds was down from Massachusetts, and several other New Englanders were among the twenty-five who participated. Golg, baseball and tennis featured the day, with a swim late in the afternoon, and areoplane flights for those attending until the ship was too weary to carry more of the salesmen who were anxious to get off the earth.

A friend sends us an envelope he received from a correspondent in Ceylon. It had been carefully turned inside out and used again.

BARNJUM PRIZES AWARDED FOR ESSAYS ON PRACTICAL FORESTRY

Prizes have been awarded in the $1,000.00 Prize Essay contest on Practical Forestry offered by F. J. D. Barnjum as follows:

First Prize: $500.00 to P. Swanson, Timmins, Ontario.

Second Prize: $250.00 to M. Currie, Grand Mira South, Cape Breton.

Third Prize: $150.00 to Donald C. Oxley, Annidale, Queens Co., N. B.

Fourth Prize: $100.00 to R. M. Brown, Pincher Creek, Alta.

So many of these essays were of high order that the judges had a very difficult task in awarding these prizes, but inasmuch as the names and locations were detached from all essays before being submitted to the judges, the contestants have the assurance that no bias or favoritism entered into their decisions.

All these prize essays will be published in the press from time to time so that the public may have the benefit of the suggestions and recommendations contained in these valuable contributions to the cause of Forestry.

The unsuccessful contestants can feel happy in the thought that even if they did not win a prize this time they have contributed to the welfare of their country by the valuabble suggestions contained in their essays, and as our forests are our most valuable asset (for without trees civilization could not exist), they are helping to solve Canada's greatest problem.

In conversation with the Editor, Mr. Barnjum said, "The success of this prize offering has been so pronounced that it is my intention to repeat this series of prizes in the immediate future and from time to time, also increasing the amount or value of the same.

"It is important for our government to know that 90 per cent. of these 225 essays which have come from all over Canada, dating all the way from British Columbia to Cape Breton, call for an Embargo or heavy export tax on all pulpwood shipped out of the country. Eighty per cent call for the permit system for all persons entering the woods, such as recently inaugurated in the Province of Quebec, and the same percentage ask for the electrification of all railways, as a means of reducing the fire risk in our forests and also as a means of reducing our heavy railway deficit.

"My sincere thanks and high appreciation are extended to the able judges who have given unstintingly of their time, thought and brains for Canada's good, not only in acting as judges in this prize contest, but in the many other ways in which they have assisted in the important cause of Forestry. All honour to Dr. C. D. Howe, Dean of Faculty of Forestry, University of Toronto; G. C. Piché, Chief of Forest Service of the Province of Quebec; R. H. Campbell, Director of Dominion Forestry Branch, and G. H. Prince, Chief of Forester of the Province of New Brunswick.

"The thanks of all Canadians are also due to the press of Canada for the splendid publicity they have given to the cause of Forestry and all good Canadians should support Canadian newspapers and Canadian magazines. A prosperous press means a prosperous country."

SUMMER PAPER MARKET OUTLOOK

New York City, July 18.—Caution against such increases in prices for paper as would retard the return of real prosperity in the fall is advised in the monthly review of the paper industry by the Paper and Pulp Industry, the monthly bulletin of the American Paper and Pulp Association.

"The outstanding feature of the paper market," says the association, "is that while there has been the falling off of orders which was to be expected during July and August, the drop has not been as severe as has been the case in many typical years. In order words, these months are, as one authority has phrased it, a breathing space during which further strength will be gathered for bigger business in the fall.

"Present stocks are inadequate to fill the demand that is certain to appear this fall, and there is every reason to anticipate a period of greater general business activity in volume than has been for some years. The general business situation indicates that the prospective demand will have real purchasing power back of it. In the fact of this condition, many careful buyers are placing their orders during the summer, to avoid the chance of concentration at a time when the large volume of business is to be expected."

Various authorities are quoted, however, as fearing that there are symptoms of a too rapid resumption after the business depression, which might defer the sound and substantial basis which will be better for all lines of industry.

The excursion planned for the woodlands section had to a postpoued at the last minute. The fire season is not the best time for foresters to leave.

FINE PROGRAM FOR PAPER CLUB PICNIC

Trip of Montreal Club to Beauharnois on Saturday, June 22-1922

Standard time

7.50 A. M.—Leave Montreal for Beauharnois via N.Y.C. at Windsor Station.

8.45 A. M.—Arrive at Beauharnois and walk from Station to Howard Smith Paper Mill (ten minutes walk through main part of the town).

9.15 A. M.—On arrival at the mill the party will be divided up into groups and each group will be taken through the plant by a guide who will explain the machinery and processes of the various departments or stages of paper making.

12 Noon.—Meet at front door of the mill and leave for Mr. Rodier's residence for luncheon.

12.15—A dip in the St. Lawrence for those who wish it. There is a safe place to bathe for those who cannot swim. Bring your bathing suit and towel.

1 P. M.—LUNCHEON.

3 P. M.—Field sports.

6 P. M.—SUPPER.

7.30 P. M.—Motor boats trip on the St. Lawrence, or an automobile trip to Mellocheville. Those who care to dance will be given visitors' tickets to the Mellocheville Social Club, those who do not care to dance can sample some of Joe Brunet's "Butter-milk" or "Golden Glow". Those who care to fish can bring their casting rods and wood minnows and try to catch something out of the foot of the Cascade Rapids. Tennis can be arranged for a few.

9.20 P. M.—Home Sweet Home train. (there is also a train at 6.23 P. M. for Montreal)

It is now to late to say you are coming. Paper men near Montreal should join this Club now and attend the meetings.

Technical Section

H.—Bleaching, Bleach Manufacturing and Equipment

H-1 The Electrometric Titration of Hypochlorous Acid. W. D. TREADWELL.. **Helv. Chim. Acta,** iv, 396-405, (1921); **Chem. Abs.,** xv, 3052, (Sept. 20, 1921). Two difficulties are encountered in the usual titration of available chlorine in bleaching powder: (1) Unless conditions are right some chlorate is likely to be reduced and counted as hypochlorite; (2) Some chlorate may be formed from hypochlorite during analysis. It was found possible to avoid these difficulties by electrometric titration. As comparison electrode an 8 cm. long glass tube was taken, the end of which was drawn out into a capillary and turned upward. The end of the capillarly was stoppered with filter paper or with a bit of gelatin containing potassium sulphate. The tube was filled with potassium sulphate solution to which a little titrated hypochlorite solution was added. As electrodes, two bright platinum wires were used one of which was placed in the hypochlorite solution and the other in the comparison electrode. The two electrodes were connected through a millivoltmeter with high resistance or through a galvanometer with suitable ballast resistance. The end point was shown by a sudden drop of the galvanometer to O. Excellent results were obtained electrometrically by the Penot method of titrating hypochlorites with arsenite solution containing an excess of sodium bicarbonate, and by the Pontius method of titrating in alkaline solution with potassium iodine solution. -A. P. -C.

K.—Paper Manufacturing and Equipment

K-12 Admission of Steam to Dryers. Paper, xxx, No. 7, 124-125, (April 19, 1922). In order to have proper working of the dryers we must have a device that will (1) close against steam, (2) open for water, (3) open for air, (4) pass grease and scale. Devices for doing this may be listed as follows: (1) straight blow through with only a throttle valve on the outlet of the dryer; (2) open passage into a general header which is provided with a trap of some kind to maintain a back pressure; (3) a header divided so that part of the dryers have open connection thereto, their exhaust being turned into another group of dryers fitted with a large trap; (4) individual trap or water leg for each dryer; (5) same as (4) with the addition of a vacuum pump to insure removal of air. The author briefly discusses the merits of each of these arrangements, and concludes that a system such as (5), if rightly installed, would assuredly pay large dividends in steam savings. -A. P. -C.

K-19 Waterproofing of Paper. E. JENTZSCH. **Deut. Farber-Ztg.,** lvii, 587-588, (1921); **Chem. Abs.,** xv, 3745, (Nov. 10, 1921). The paper is passed twice through a bath of aluminum formate of 3 to 5° Beaumé, then well dried. In place of the usual soap bath with paraffin added, the goods are put through a lime bath of 50 to 75 grams per liter at a temperature of 45 to 50°. Two passages are given on the foulard, taking care to have no folds or wrinkles in the goods before calendering.-A. P. -C.

L.— Articles of Pulp and Paper

L-8 Printers' Technical Problems. THOS. E. DONNELLEY. **Paper Trade J.,** lxxiii, No. 19, 36-38, (Nov. 10, 1921); **Paper,** xxix, No. 13, 13-15, (Nov. 30, 1921). A discussion of some of the things the printer would like to see accomplished through co-operation with the paper maker, including standardization of sizes and weights, definition of paper, private brands, source of manufacture, making of good-will, short sheets, effect of coating on ink, "acid in the paper". -A. P. -C.

N.—Power Generating and Equipment

N-6 An Electric Steam Generator for Low Voltage. F. A. LIDBURY and F. A. STAMPS **Trans. Am. Electrochem. Soc.,** xl, (advance copy), (1921); **Chem. Abs.,** xvi, 25, (Jan. 10, 1922). To provide steam for an electric power consuming establishment which either makes or purchases blocks of firm hydro-electric power it is sometimes desirable to have some simple and practical method of converting this electric energy into steam. Such an installation must be of low first and maintenance cost. A description of an apparatus built up of several concentric pipes, operating on the water resistance principle, and designed for alternating current at 100 to 500 volts, is given. Such a unit can be built for less than $500, occupies very little space (12 inches diameter), requires no special foundation, and is semi-portable. At the rated load of 250 kilowatt, nearly 700 pounds of steam per hour (25 boiler horse power) are produced from unheated feed water. It has been in operation over 6 months and requires little more than half an hour of attention daily, and probably not that much if equipped with simple automatic regulation. -A. P. -C.

R. — General

R-5 Developments of the Canadian Pulp and Paper Industry in 1921. Pulp and Paper, International Number II, 98-106, (Dec. 1921). -A. P. -C.

R-11 Training Undergraduates in Industrial Relations. DEXTER S. KIMBALL, Dean, College of Engineering, Cornell Univ. **Chem. Met. Eng.,** xxvi, 106-108, (Jan. 18, 1922). The engineering school curriculum should contain courses in the principles of industrial organization, cost finding, wage system, and the general economics of industry. The study of human relations is important to enable the student to help in building a better industrial world. -A. P. -C.

R-12 Practical Considerations in Paper Costs. JOHN R. LOOMIS, Loomis, Suffren & Fernald, New York. **Paper Trade J.,** lxxiii, No. 22, 28, 30, 32, (Dec. 1, 1921); **Paper Ind.,** iii, 1250-1253, (Dec. 1921); **Paper,** xxix, No. 14, 20-23, (Dec. 7, 1921). A discussion of the necessity for simplicity in any cost system, of the important factors in costs statements, determining cost of production, locating responsibility for troubles, and estimating present costs. A classificatoin of items entering into the cost of news print is given. -A. P. -C.

R-12 Main Elements of Paper Mill Costing. L. W. FARROW, Wiggins, Teape, & Co., Ltd., London, England. **World's Paper Trade Rev.; Paper,** xxix, No. 12, 24-30, 32, (Nov. 23, 1921.) A general discussion of the subject, comprising the definition of a cost system, its purpose, some fallacies in costing, and costing in fine paper mills. -A. P. -C.

R-13 Fall Business Conference of the American Paper and Pulp Association and of the National Paper Trade Association, Chicago, Nov. 1-4, 1921. Paper, xxix, No. 10, 7-8, 20-21, (Nov. 9, 1921); **Paper Trade J.,** lxxiii, No. 19, 17-19, (Nov. 10, 1921); **Paper Ind.,** iii, 1134 et seq., (Nov. 1921). A brief account of the meeting. -A. P. -C.

UNITED STATES NOTES

An illustration of how the corner has been turned in the paper industry aside from the advance of $5 a ton in newsprint recently announced, is found in the news that Union Bag and Paper is now running at capacity, while its newsprint subsidiary, the St. Maurice Paper Co., is refusing business.

George H. Carter, Public Printer, has advertised for bids on paper to be used for public printing and binding for the term of six months beginning the first day of September, 1922. Some of the estimated requirements, in grades calling for supply in huge quantity, are the following: 1,040,000 pounds newsprint paper; 4,848,000 pounds machine-finish printing paper; 1,105,000 pounds sized and super-calendered paper; 1,065,000 pounds writing paper, high machine finish; 2,680,000 pounds writing paper, air or loft-dried; 550,000 pounds ledger paper; 3,500,000 pounds U. S. postal card cream bristol board, and 380,000 pounds binder's board. Papers, board, etc., for other requirements are called for in quantities ranging from several thousand pounds up to several hundred thousand pounds.

The National Aniline and Chemical Company, Inc., has just issued its customary booklet of Dyer's Formulas. This booklet is a valuable guide to the color using trades.

With the addition to its executive force of Joseph H. McCormick, formerly vice-president of Henry Lindemeyer and Sons, the American Paper Mills Corporation of New York, is planning enlarged and improved facilities for handling its lines together with a thorough reorganization of its selling force.

In accordance with Mr. McCormick's ideas, standardized mill brands of those manufacturers whose products have proven their worth, will be exclusively featured. In other words, it is intended to carry no lines that would be in competition with each other, and no private brands, thus assuring 100 per cent. representation and loyalty.

All matters having a bearing upon the physical safety of employees in paper and pulp mills will come up for discussion during the sessions of the Eleventh Annual Safety Congress of the National Safety Council to be held in Detroit August 28 to September 1. The following representative paper men are on the program to address the gathering or to read papers relative to safety problems in the industry: W. A. Gleason, Safety Director, Hammermill Paper Company; Raymond A. Steffen, Champion Coated Paper Company, Hamilton, Ohio; Frank A. Drumb, Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis.; Adam Wilkinson, Labor Commissioner, American Writing Paper Company, Holyoke, Mass.; Edward Preville, Kimberly-Clark Co., Neenah, Wis., and Dr. Hugh P. Baker, Secretary-Treasurer, American Paper and Pulp Association, New York.

Operations were resumed last week at thte Gill, Wauregan and Norman mills of the American Writing Paper Company, Holyoke, Mass. Business is regarded as booming by company officials, who state that their mills are running 70 per cent. better this year than for a corresponding period last year.

The recent action of stockholders and directors of the Eddy Paper Company, Three Rivers and White Pigeon, Mich., placing in the hands of an executive committee all affairs of the concern, has led to the resignation of A. B. Thomas, general manager. Mr. Thomas has not given out his plans for the future. He is a man of recognized ability in the board making field.

The Kingston, Pa., paper mills of the Barrett Company have been put in first class shape during a shut-down of several months. Former employees and new hands are being recruited as fast as possible for a resumption of operations. Felt paper is the main product of the mill.

T. Harvey Ferris, Thayer Burgess and William F. Newton, composing a new corporation styled the Hinckley Corporation, are taking over the affairs of the Hinckley Fibre Company which was placed in receivership some time ago. The property was purchased July 1 from the receiver for $501,340. The new concern represents the interests of the former firm's creditors. The reorganization plan under which it is proposed to operate the plant is subject to the approval of Judge Frank Cooper of the United States District Court. The property sold includes a wood-pulp making plant at Hinckley, some timber land, most of which has been cut over; about 25,000 cords of pulpwood cut in the woods along the West Canada, and some other minor assets.

The Lincoln Box Company at Merrill, Wis., is trying out a machine for manufacturing wooden plugs for paper rolls. The device is the invention of H. L. Mumm of Wausau. It makes five plugs at a time, releasing them automatically from the machine. The invention is designed to greatly reduce the cost of the plugs while enormously facilitating their production. Heretofore the high cost of such plugs has been the main obstacle to their more general use on a large scale.

The Peshtigo Paper Company's paper mill at Peshtigo, Wis., last week re-opened for operations after a shutdown since early in May. Work on improving and enlarging the plant is planned for an early date.

The old Savage Manufacturing Company plant at Skowhegan, Me., has been made ready for a resumption of operations. It is now the property of The Skowhegan Paper Company, a concern recently formed to take it over following its purchase at a mortgage sale. Bert White of Rumford has been engaged as superintendent.

STEELE'S NEW COMPANY

George F. Steele, formerly general manager of the Canadian Export Paper Company, has returned to New York following a visit to Scandinavian countries during the past three months. He has announced that he has formed, under New York State laws, a paper sales concern to be styled the News Print Corporation. L. Calder and F. W. Westlake are named with him as incorporators in papers filed at Albany. $200,000 is the amount of the capital stock. Mr. Steele is said to have secured the agency or representation in the United States for several large Scandinavian newsprint mills.

MEETING OF KAMINISTIQUIA BOND HOLDERS

A meeting of the bond holders of the Kaministiquia Pulp and Paper Company is called for eleven o'clock in the forenoon of Monday, 31st July, 1922, to consider and confirm certain actions taken by the trustee and for further instructions. The meeting will be at the office of the trustee, Capital Trust Corporation, 174 Bay St., Toronto.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, July 18. — Locally the paper trade is quiet. It was described by the manager of one jobbing house as "rotten." Even making allowance for this emphatic declaration, there can be no doubt that there is a break in the expansion which characterised business since the beginning of the year. One reason for this is the dull condition of the printing trade, and another the falling off which almost invariably occurs during the summer months. But it will pick up again.

The newsprint position continues strong. The prospects are in favor of the demand remaining good until the end of the year at least. There has been no indication that Canadian mills are likely to do anything in the way of advancing the price for new business. A considerable amount of newsprint is being shipped by water. The Donnacona Paper Company, for instance, are sending all their production to New York by boats, which are able to load at the docks. This method has the merit of being cheaper than by rail, and also obviates delays which would follow such a strike as is now threatened in the States. It would not be surprising if many mills situated on or near tidewater followed the example of the Donnacona Company. Some companies have under consideration the feasibility of using barges during the summer, and one concern has undertaken to build special power barges for this trade. It is of the utmost importance that the publishers should have a continuous supply of paper, and the mills desire to co-operate with a view of adopting methods of transportation that will meet all possible contingencies.

The fine paper and book paper mills report that business is good. After a period of dullness, there is a revival in boards, and the mills are receiving some very substantial orders. It is understood that a Quebec Company has received inquiries for business on a basis of 5000 tons a year for U. S. account. The trade in roofing papers remains brisk, while in rags and waste paper a fair business is passing.

The pulp market is unchanged. The orders for bleached sulphite continue to come in at a good rate at unaltered prices. The call for groundwood is also better, but prices are low. It may be stated that good progress is being made with the reorganisation plans of the Riordon Company, although it will probably be some time before any public announcement is made. The company is gradually working into a better position; both mills are running at capacity under contracts which allow for a moderate profit on the operations.

Toronto Topics

Everything in this neighbourhood points to very satisfactory crop returns. Wheat harvesting is commencing in Central Ontario localities with excellent weather and from all appearances should be very good, while fruit crops continue to promise well.

50 per cent. of the Western wheat is in the head, and farmers are buying 40 per cent. more twine than in other years, is the heartening news from the West, where farmers are said to be liquidating much of their paper by sales of last year's hold over. These facts, no doubt, have a great deal to do with the very stable conditions shown in the local stock and bond markets in spite of the disconcerting possibilities bound up in labor questions, involving both coal and transportation, and the continued clouds over the European export trade.

Local business is reported as being only fair but that is a condition usually discounted here as being part of a quiet six weeks prior to the Canadian National Exhibition after which a large volume of business is done by local wholesalers.

The general feeling is one of confident expectation.

MARKET NOTES

Prices for all grades of Pulp are unchanged and steady.

Groundwood—$30.00 to $40.00 delivered.
Sulphite—News grade, around $60 delivered. Book grades around $65.
Sulphate—$70.00—delivered.
Writings—Fairly active.
Book—Inclined to quiet.
Wrappings—Business shows a steadier behaviour than previous months, buyers are also taking quantities, prices unchanged.
No. 1 Kraft M. F., $8.00; M. G., $8.15.
Colored Sulphite, $8.00.
Colored Kraft, 9¾c to 10¾c.
B. Manilla, $5.50.
No. 1 Manilla, $6.75.
Fibre Manilla, $6.75.
Bags—Light Manilla, 62%-7½% off 100 M Lots.
Heavy Manilla, 60% off 100 M Lots.
Light Kraft, 60% off 100 M Lots.
Heavy Kraft, 50%-10% off 100 M Lots.
White Confect 17½%-10% off 100 M Lots.
Tissues—No. 1 Manilla, 20 × 30, 80c; 24 × 36, 1.05;
Natural White, 20 × 30, 90c; 24 × 36, 1.25;
No. 1 White, 20 × 30, 1.10; 24 × 36, 1.55;
Natural or No. 1 Manilla Sulphite. 20 × 30, 1.00; 24 × 36, 1.40;
Towels—Car Lots
Interfolding per case $5.63 Net.
Bleached White—Rolls of 150 Towels, 50 rolls to case, $22.00 Less 22%; Natural, $19.00 Less 22%; No. 3. Towels, $13.75 Less 22%.
Toilets—Car Lots—List Price Less 20% and 25%.
Paper Stock—A number of mills are in the market for new cotton cuttings and prices are inclined to be firm.
No. 1 Hard White Shaving $3.75.
No. 1 Soft White Shavings $3.25-$3.35.
Heavy Books and Magazines $1.70.
Ledgers and Writings $1.95.
No. 1 Kraft $2.00-$2.25.
Newspapers .80
No. 1 Mixed Papers .60
No. 1 Miscellaneous .55.
No. 2 Miscellaneous .52½.
Cotton Rags No. 1 White .04½.
Thirds and Blues (repacked) .02.
Roofing Rags $23.00.
New Cotton—Fancy Shirt Cuttings .05¼-5½.
No. 1 White Shirt Cuttings .10¾-11.
Canton Flannels Bleached .08-8½.
White Lawns .07½.
Blue Overall Cuttings .05½.

Ropes and Bagging—No. 1 Scrap Bagging $17.00.
No. 1 Manilla Rope, .05¾-.06.
Mixed Strings, 18.00-20.00.

NEW YORK MARKETS

New York, July 15—(Special Correspondence)—Activity in the paper industry continues of fairly broad scope. Of course, demand for certain grades of paper has slowed down as it usually does during the middle of the summer, and mills producing such kinds of paper therefore are not so busily engaged as they were, but taking the market as a whole, there is a very substantial business passing in paper with the opinion general that the volume of supply at present moving from mills to consuming centres is greater than usual at just this time of the year. Consumers and jobbers in numerous instances frankly say they look for a very active paper market during this coming fall and that they would not be surprised to see prices advanced much above the levels now obtaining, and are consequently looking to cover at least a part of their anticipated requirements by placing orders now. Mills and merchants are advising their customers to get orders in, whether for shipment in the near future or for far-away delivery, pointing out that when the customary fall stimulation of business occurs and buyers flock into the market, as they are confidently expected to, prices may seek higher levels. On the other hand, it is generally stated by paper jobbers that they are having little or no difficulty in securing all the supply of paper wanted at present, and in getting deliveries made promptly. Manufacturers in many cases are not drumming as much as they were a short time ago for business, but indications are that mills, with few exceptions, can still accomodate more business and any orders that are offered are readily booked, while buyers are successful in getting practically any delivery specified.

The railroad strike seems to be assuming a serious complexion. Thus far, according to representative members of the trade, paper mills have not been inconvenienced to any great extent by the delay in transportation, but the strike is gradually reaching a stage where railroad traffic is badly congested and unless relief comes quickly it is probable the manufacturing establishments of the country may be severely hampered in their operations by delay in the arrival of raw materials and in the outgoing movement of finished product.

New York paper trade men who have just returned from trips through the mills give very optimistic reports of their observations while calling on paper manufacturers. It is said that mills in various parts of the country are running at a better-than-average pace at present, and that most plants have enough orders for their product booked to keep them operating for some time to come. Indications are, it is stated, that few mills will close down this summer for repairs and inventory as they usually do; most manufacturers have business on their ledgers which requires the steady running of machines, while there is a desire among most paper producers to store up a sizeable reserve stock of paper for expected fall requirements. There is a feeling througout the trade that paper business is going to hold up exceptionally well during the current summer, and that aside from slight dips here and there in prices on some kinds of paper, market levels will be well maintained.

The rise in newsprint prices announced by the International Paper Company last week has served to further strengthen the tone of the print paper market. So far as is known, the other large domestic producers of newsprint have not as yet followed the lead of the I. P., and are still quoting former prices, but it stands to reason that these manufacturers will not continue to market their product at lower prices than the I. P. for long. There are many in the trade who frankly say they would not be surprised to see another advance in newsprint prices for the final quarter of the year. Market conditions are in favor of higher prices it is contended, with manufacturers having nearly everything on their side. Consumption of newsprint is large, and is steadily growing, notwithstanding the season. Newspapers in all part of the country are reported printing big issues, and newspaper circulation is increasing. If this situation prevails now it is argued that demand for newsprint in the last part of the year will be of record breaking proportions, and, after all, demand for a commodity makes price. Moreover, it should be understood that newsprint mills have the great bulk of their output for the balance of the year sold on contract at the price basis obtaining during the first six months of the year, namely $70 per ton, it is quite likely that if the market warrants they will seek to get just as high prices as they can for the limited production they have to dispose of to transient buyers who could not be induced to contract for supplies at the old price.

The box board market is active, and characterized by a healthy undertone. Consumers are buying freely, and mills are running at a very brisk pace and appear to be having little trouble in finding an outlet for their production. Prices on boards are firm.

Ground Wood—The report of the destruction of a large stock of ground wood, said to approximate 30,000 tons, at the plant of one of the leading Canadian producing companies has had a stimulating influence on the mechanical pulp situation here. No actual change has occurred in quotations, though members of the trade contend that the loss of this tremendous amount of ground wood must necessarily have its effect on the market, if not in the immediate future, later on in the year, especially since United States consumers derive a good part of their supply from the concern which suffered the disastrous fire. Domestic grinders continue to quote around $30. to $31 per ton for prime spruce ground wood f. o. b. pulp mills for prompt shipment, and while consumers are managing to effect some purchases at less than these figures, it is commonly conceded that the bulk of ground wood selling at present is bringing these prices.

Chemical Pulp—Sulphite of practically all kinds is in good demand and prices are holding steady. Dealers and importers report a particularly consistent call for bleached sulphite, and unbleached also is moving freely. There is considerable talk in the New York trade regarding a decline in prices on foreign kraft pulp, it being said that sellers are offering this kind of pulp at a substantial recession from the market levels lately ruling. Down to $45 per ton ex the dock at this and other American Atlantic ports is mentioned as the level at which sales have been made, but importers are rather reticent regarding the matter and generally hesitate to give information concerning the position of kraft pulp.

Rags—Activity in papermaking rags keeps up at a fair rate though there is not the snap to the demand from consumers that existed up to a few days ago. Roofing mill grades are in good call and prices on these qualities hold very firm, with No. 1 roofing stock bringing around 1.20 cents a pound f. o. b. New York, No. 2 packing 1.10 cents, and foreign dark cottons between 1.17½ and 1.20 cents ex dock New York. New cuttings are firmly held by dealers, especially white shirt cuttings, which are quoted at 10.75 to 11 cents a pound New York for No. 1 cuttings. Old whites are moving in a more or less consistent manner at between 6 and 7 cents a pound f. o. b. dealers' shipping points, depending on the quality of the packing.

Paper Stock—Demand for the low grades of waste paper used chiefly by board mills has featured the market this week. No. 1 mixed paper is selling freely at around 55 cents a hundred pounds f. o. b. New York, and up to 60 cents has been paid in some instances. Folded newspapers are steady at an average of 67½ cents a hundred pounds f. o. b. this city, and container manilas are bringing 80 cents New York, overissue newspapers 95 cents, and common mixed paper 45 to 50 cents. Old magazines are in quieter demand but packers appear to be holding up prices at around 1.85 cents per pound at shipping points. Ledger stock is firm at a quoted level of 1.80 to 1.90 cents, while shavings have eased off another peg in price to about 3.55 cents a pound New York for No. 1 soft white shavings.

Old Rope and Bagging—Demand for old manila rope is reported good though some paper mills are said to have let up in their buying to some extent. Prices named by dealers range between 5.75 and 6 cents a pound at shipping points for No. 1 rope, and most sellers want the higher figure. Old bagging is moving in a little better volume. Sales of No. 1 scrap to tissue paper mills have been reported at 1.10 cents a pound New York, and of roofing bagging at 80 cents a hundred pounds.

BELGIAN PAPER INDUSTRY

Provincial makers and users of coated papers will find some interesting facts contained in an official report concerning the industrial condition of Belgium up to the end of 1921, issued by the Department of Overseas Trade. The paper industry of the country is chiefly centred in the Ardennes and the province of Brabant. A number of mills are affiliated to the Groupement des Pâtes, Papiers et Cartons, attached to the Comité Central Industriel de Belgique, and their production for the first eight months of 1921 amounted to 51,310 tons. There are 15 mills, however, which are not affiliated to this association. The production of paper during 1921, however, shows a decrease on the previous year, when 73,545 tons were produced during the first eight months. Considerable competition is felt from Germany as a result of the state of the German exchange. In the early part of the year the Provincial Government of Brabant nominated a Commission to study the question of creating a technical school of paper making. The preliminary duties of this Commission relate to the industry in Belgium, but at the present time they are largely dependent on foreign firms for supplies of pulp and also encounter difficulty in obtaining labour for the purpose of manufacture. With the acquisition of the district of Malmedy, an important paper mill—the Papeteries Steinbach et Cie., S.A. of Malmedy—passed to Belgium. This factory specialises in the manufacture of photographic papers, both raw and baryta-coated, and also raw papers for ferro-gallic, blue-print and sepia processes. This is an important and up-to-date factory, which, moreover, it had been intended to extend considerably, but

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WOOD PULP

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MEXICO AND CUBA FOR

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Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

extension has been temporarily abandoned on account of the bad state of trade. Good quality writing paper is chiefly imported into Belgium from Great Britain.—The Paper Container.

GUMMED PAPERS

(A Book Review)

It is not more than a few years ago that all gummed paper had to be coated in the sheet by hand, and considering the difficulties incident to the old-fashioned method, the results so obtained were surprisingly good. Eventually with the introduction of sheet machines and reel machines, a much more perfect article was produced. There was still a difficulty, however, as all gummed paper was subject to the great drawback of curling, and finally the non-curling gummed paper was produced.

In 1910 a patent non-curling gummed paper was placed on the market by Samuel Jones & Co., Ltd., the gummed and coated paper makers, now over a century old, and today their range of papers in this line is enormous. That the firm pays very great attention to every detail in connection with their products has been made particularly clear during the last few days by the production of a most handsome book containing some hundreds of pages dealing with the gummed papers for which this firm is noted.

"Samples and Suggestions for Gummed Paper Users," is the heading given to this book, but the whole production is so artistic that such a heading seems unworthy of it. True, there are some hundreds of samples of gummed paper given, including white, white enamel, coloured, extra fine coloured, superfine coloured, cobb, cheque, surface, superfine surface, tinted enamel, calf, metal coated and samson; also each page sample contains a number of useful particulars, but apart from all this the book is a real source of information.

In addition to some introductory remarks on the subject of gummed paper and the question of non-curling, there is a very distinctive article on dextrines, and another on fish glue, while a most interesting article, profusely illustrated, is given on the story of Gum Arabic. This is followed by another similarly illustrated article on Animal Glue, and the rest of the book is given up to descriptions of non-curling gummed papers, as already mentioned.

Much time, energy and ingenuity must have been spent in the compiling of this book, and as far as possible the firm has tried to present each sample of their stock gummed papers in as comely a manner as possible. There is no attempt made to dictate in what manner these papers should be used, but the printing on the samples given is merely intended to indicate briefly different types of labels and somewhat suitable papers for their use.

The book has a stiff cardboard cover, with an ornamental tissue paper over it, and the whole is contained in a neat cardboard container, with a design in general harmony with the book. Those who are fortunate enough to secure a copy of this book will be hardly likely to treat it as a mere catalogue, for it will be found more than that, and Messrs. Jones are to be congratulated upon their book, which may well be called unique.—The Paper Container.

"DRY" PAPER TWISTING MACHINE

The manufacture of paper yarns by twisting paper strips has been in operation in this country for several years, and paper yarns and fabrics have established their suitability for a number of uses.

Hitherto, in the manufacture of these yarns a very considerable proportion of added moisture has been necessary in the twisting operation—in the case of thick yarns up to 40 per cent. moisture being considered essential. This moisture is not necessary in the finished article and its presence necessitated an additional drying process to secure its removal.

Recently, however, Mr. J. Swanzy Harley has invented a paper twisting machine which successfully twists the paper in its dry state. The resulting yarn is stated to be remarkably even with a smooth polish, while no drying operation is necessary. It is further claimed that as most of the unsatisfactory features hitherto possessed by paper yarns were due to the excess of moisture this dry twisting machine would appear to have a distinctly promising field.

The machine is stated to be extremely simple of operation, one girl being able to mind 20 spindles on average width strips with the machine running at commercial speeds, e. g., using a paper strip 50 mm. wide, one girl can comfortably handle one ton per week, of 47 hours from a 20-spindle frame.

This "Harley System" of dry twisting is being operated by Harlspun, Ltd., Sugar House Lane, Strafford, London, E., under the direction of the inventer. The machines are manufactured by Robert Broadbent and Son, Ltd., Phoenix Iron Works, Stalybridge.

Mr. S. E. Seaman, who has been closely connected with the organization of the Stamsocott Company at Hopewell, Va., has resigned from this company where he held the position of general sales manager, and is now going into business for himself as consulting engineer having particular relation to the design and installation of plants for making linter pulp for chemical purposes. The use of cotton linters in paper mills has proved very successful and is being widely extended. Mr. Seaman's experience with the development of this material almost from the start, will now be available to the industry at large.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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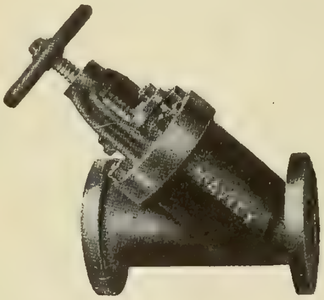

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:-: EDITORIAL :-:

NOT STAMPEDED

Our good friend the "Montreal Gazette" on Thursday last, remarks, "The usually level headed "Pulp and Paper Magazine", along with Mr. McKee, was stampeded into a belief that prices of newsprint would not be increased this year." The Gazette goes on to say that the market has been growing constantly firmer and that this condition has been taken advantage of by several American producers to increase the price of newsprint from $70 to $75 per ton. The article goes on to remark that the paper securities have shown a strong upward tendency and that investors have not been scared by such comments as the president of the Canadian Pulp and Paper Association or the Pulp and Paper Magazine have made. The newspaper's financial page is usually, and no doubt properly, for the encouragement of investments.

We thank our contemporary for the compliment, but the use of the word stampede is a bit strange in connection with the situation, since there was no such attitude or feeling as the word implies. Our comments were the result of long and deliberate consideration of all the factors on which information and advice could be obtained and we are still of the opinion that $70 will be the basic price for Canadian paper, at least, for the balance of the year. We should not be greatly surprised if the principal producers should find it advisable to hold to this price for at least a portion of the new year. The intimation of the Gazette that the increased price is wholly due to market conditions, does not seem an entirely correct interpretation of the situation. It seems that a considerable factor in the case is the fact that in order to supply the additional paper which the market seems to want, it has been necessary for a large paper company to resume operation of plants which could not make newsprint at a profit on the $70 basis; it became then a case of the consumer buying at the advanced rate or not getting the paper.

The American publishers have been using a quantity of paper considerably in excess of the 1920 average, which was then the highest on record. Even this increase in consumption has not seriously over-taxed the present producing capacity of North American newsprint mills and there has been used a fair amount of foreign paper. Present operations in extending old and establishing new mills in Canada, will provide something in excess of 400 tons a day over present production and will be available within about nine months. While this is only about 5 per cent. of American consumption, it is pretty nearly the normal yearly increase in newsprint consumption in that country. With the present capacity of the mills able to take care of current requirements, it appears that this new production will more than cover the increase in consumption that may be normally anticipated. There are authorities who feel that increase in consumption will not overtake this increase in capacity for some time yet, but will keep mills fairly busy. From a consideration of the whole situation, it seems to us that during the next year there will not be sufficient market pressure to force an increase of more than the $5 per ton recently instituted by some American purchasers, even should that much of an advance be announced. A sharp revival of overseas shipments may change this somewhat. Any appreciable increase that comes will rather be based on possible increases in cost and with an apparent stabilization of commodity and wood figures higher costs of production will likely be based on higher cost of wood so that the cost of paper will be based on competition for wood supply among producing mills rather than the competition for finished product among the consumers.

While so near the subject, it may be just as well to follow the matter a little further and consider where the wood is for more mills. A comparison of the map with established plants will show that the growth on the forest lands in Eastern Canada will just about take care of present capacity. There are even some who feel that these mills will have to look pretty close for wood from present stands in order to carry them through until new growth can be established and made available. Without extensive and well protected limits, some mills will doubtless have to bring wood in from very considerable distances. Going farther west, there appear to be a few possible locations available in Ontario with a production of possibly 300 tons and in Manitoba a production of, say, 400 tons while Alberta and British Columbia could support perhaps as much again so long as the wood lasts. For in spite of the consoling statements that emanate from the various forestry branches, there is a lurking feeling of uneasiness that all is not well with the pulpwood situation in Canada and we all know that in the United States the problem of wood supply is causing the industry more concern than any other feature of it.

COBWEBS

New mills are talked of in Ontario, Alberta, and British Columbia.

Speaking of pulp and paper mills, what is the Great Lakes Pulp and Paper Co., going to do about it?

Contemporary Comment

NEWS PRINT PRICES

(Paper Mill)

The definite end of the period of depression and the speedy return to sound and prosperous conditions is indicated by the fact that the International Paper Company has just increased the price of news print paper for this quarter from $70 to $75 a ton. After the long period of declining prices and decreased demand this increase in the price of news print paper is a definite and certain indication of stronger conditions in this industry. In many ways it can be said that the news print industry, because of the large volume of news print paper produced in comparison with other grades, is the barometer for the rest of the industry. For this reason the increase in the price of news print is especially important. This is only one more of the signs of the times that make it absolutely certain that the manufacturers and distributors of paper and pulp are well along on the high road to good business.

THREAT TO REDUCE PAPER TARIFF

(U. S. Paper Maker)

A threat to reduce the entire paper tariff, in order to meet the demands of the western Republicans and the Democrats who hope to use high tariff as a campaign issue the coming fall, has featured activities in Washington the last few weeks. The Senate Finance Committee has begun modifying many other schedules, for political effect, and the report that paper was to be a victim of this wholesale slaughter took officers of the American Paper and Pulp Association to Washington to endeavor to prevent such action.

The paper industry is now standing as a unit behind the paper schedule as originally passed by the Finance Committee, and is making every effort to prevent the proposed slashing of these schedules.

Latest advices are that the telegrams to Senators from the paper making states sent by paper manufacturers is having a strengthening effect upon the situation, and may prevent any change from the present fair schedules.

CHARLES RANSOM MILLER

From a contemporary's tribute

The venerable and distinguished editor-in-chief of The New York Times, full of years and honors, has passed into the Great Beyond, whilst his friends and associates mourn his loss and his children and relatives are distressed.

Born of old New England stock, trained in the strict discipline and under the uplifting influences of a Christian home, a graduate of Dartmouth College, he joined the staff of The New York Times 47 years ago, at the age of 27, as assistant telegraph editor and at a time when The Times represented an entirely different type of journalism than it represents so ably today.

At the age of 34, Mr. Miller was made editor-in-chief of The Times and for 40 years he has held that position in one of the most highly competitive newspaper fields in the world.

The University of Toronto wants a copy of the Pulp and Paper Magazine for July 3, 1919. We shall be glad to pay 25 cents for any copies of this date sent to the editor.

BUY BRAINS INSTEAD OF WHITE PAPER

(Editor and Publisher)

Many newspapers throughout the country are running wild again in the matter of newsprint consumption. This is reflected in the advances this week in the stock of the International Paper Company, whose mills are running close to capacity, despite the increased production of 240 tons a day from its new Canadian mill, just recently put into operation.

If the present New York City situation is typical of the country as a whole and if the consumption of newsprint paper for the next six months keeps pace with the consumption for the past six months, it is perfectly safe to assert that the newsprint bill of American newspapers for the year 1922 at present prices will be approximately $20,000,000 more than in 1921.

That many newspaper men still believe that the only way to improve the paper is to increase the number of pages in each edition, is shown by a study of the Evening Post comparative figures, for the six months' periods—January to June, inclusive for the years 1920, 1921 and 1922.

For the first six months of 1920 the 17 greater city dailies printed 70,113 pages in all, of which 84,129,781 lines represented paid advertising.

In the first six months of 1921 the New York City dailies printed 71,570 pages, of which 76,873,600 lines were paid advertising.

The same period in 1922 produced 81,552 pages, of which 80,930,110 lines were paid advertising.

An increase of 9,982 pages in six months in 1922 over the same period in 1921, with an advertising gain of 4,056,510 lines, or a gain in pages in 1922 over 1921 of about 14 per cent.

Also an increase over 1920 of 11,439 pages, or approximately 16 per cent. with an actual decrease in advertising lineage in 1922 as compared with 1920 of over 3,000,000 lines.

The available data seem to indicate, roughly, that for the six months' period in 1920 advertising in the 17 greater city newspapers averaged 56 per cent. of total pages. This dropped to 47 per cent. in 1921 and to 44 per cent. for the past six months.

News, features, text of all kinds, now represents an average of 56 per cent. of the total space in these dailies, whereas, in 1920 it averaged 43 per cent., and 1920 was the high peak advertising year.

The need of the hour in many offices is for proper newsprint control. Obviously, under the present system of adding pages ad lib. the waste is appalling.

Our conviction is that a large percentage of the money represented in increased white paper charges on New York City dailies for the past six months could have been spent to far better advantage in editorial executive capacity and writing and editing ability.

Indeed our belief is that one-half of that sum invested in brains would have produced many times the returns in increased circulation, prestige and earnings.

Why not invest in brains, rather than in white paper?

IS IT FAIR?

To live in a town—
To make a living off it—and out of it—
To educate your children in it—
To get everything you possibly can—out of it—
And put absolutely nothing into it?

Riches are measured by contentment.

Advantage of Decimal Standard of Weights

By F. E. STAPLEFORD
Purchasing Agent, U. S. Ptg. & Litho. Co., Cincinnati

PURCHASING AGENTS PASS RESOLUTIONS

Whereas, the National Association of Purchasing Agents favors the American Decimal Standard of Weights for Paper for all kinds of paper and paper boards, as a substitute for the present various basic ream weights, because of the economy, accuracy and general convenience arising from the use of that Standard, therefore be it

Resolved, that all paper and paper-board manufacturers, brokers and dealers be, and hereby are, requested to adopt The American Decimal Standard for Weights of Paper and to abandon all other bases. Be it further

Resolved, that a copy of this resolution be transmitted to: The American Pulp and Paper Association, The National Paper Trade Association, The Box Board Manufacturers' Association, The Eastern Paperboard Manufacturers' Association, The Canadian Pulp and Paper Association, and to such other associations, mills, dealers and brokers as may be interested.

The general system of weights and measures in use by the English-speaking nations of the world is without doubt the most complicated known to civilization. I refer particularly to our inch, foot, rod, acre, pint, quart, gallon, ounce (both wet and dry measure), pound, ton, etc. Many of these tables of measure which I learned at school years ago, I am shamed to confess I have long since forgotten. After all I am not certain I am altogether to blame.

But of all of these systems of measure there is none, absolutely none, that compares in complexity, with all attending inconvenience and inaccuracy, with our American system of basic weights for paper.

We Americans have a way of making light of the British system of money, with its pence, shilling and pound, yet we steadfastly and stubbornly cling to the bad habit of indicating the weight of—

	Sheet per ream	Size
Book papers	500	25 x 38
Wrapping and waxed	480	24 x 36
Newsprint, onion skin and vegetable parchment	500	24 x 36
Tissue papers	480	20 x 30
Blotting	500	19 x 24
Fine Stationery	500	21 x 31
Writing, bonds and ledgers	500	17 x 22
Other ledgers	500	17 x 28
Ordinary glazed	500	20 x 24
Extra fine glazed	500	20 x 25
Index Bristol	500	20½ x 20¾
Index Bristol	500	25½ x 30½
Mill Bristols and cardboards	500	22½ x 28½
Blanks, railroad blanks and tough checks, either by weight or ply	...	22 x 28
Cover	500	19 x 24
Envelope	500	22½ x 30
Coated folding boxboards by thickness	...	28 x 44
Binder board—Bundles of 50 pounds each, the number of the board being the quantity of sheets weighing 50 pounds	...	20 x 30
Combination, straw and chip boards—same as binders board except basic size is	...	26 x 38
Patented coated and wood pulp board	500	24 x 36

It will be seen at a glance that there is no common standard. These scales are complicated even to the expert paper buyer and to the lay buyer they are nothing short of a Chinese puzzle and often lead to serious misunderstandings and costly mistakes. The basic sizes do not readily fix themselves in a layman's mind.

The paper industry, five or six years ago adopted a system known as "Substance Numbers". This system comprehends the establishment of the weight of some particular stock size as the standard of weight for that particular class of paper. For example: in book and litho papers, 25 x 38 has been adopted as the standard or basic size and the weights in this size are made in various weights equivalent to the weight of the standard or basic size. For instance, basis 25 x 38-50 lbs. in size 28 x 42 weighs 62 lbs.; it was formerly stocked 28 x 42-60 lbs. or two pounds lighter per ream of this size, without regard to any standard.

The weakness, if not defect, of this system, lies in the fact that the substance number or weight applies to one class of paper only. Book papers, writing papers, cover papers, etc., each have their special basic size and respective substance numbers as just enumerated. There are at present from twelve to fifteen classes of paper stock, more or less used by printers, with corresponding basic sizes. The "substance" number of some particular grade of paper has no relation whatever to the same identical "substance" number of another. It may indicate either a greater or lesser basic weight.

The whole present system og basic weights is extremely complicated as to the process of figuring; increases the cost of estimating and checking and greatly increases the chances of error. To find the weight of a sheet 20¾ x 36 on a basis of 25 x 38-50 lbs. four distinct operations are necessary—20¾ must be multiplied by 36; 25 must be multiplied by 38; the product of 20¾ and 36 must be multiplied by 50; and the result divided by the product of 25 x 38.

Paper is sold by the ream; the printer sells his converted product by the thousand count. This causes not only a constant clerical effort in translating five hundreds into thousands, but I believe there are few printers of experience who have not been embarrassed at one time or another, either by their own or their competitors' errors, in figuring half the amount of paper required.

This chaotic condition in due course brought the Pulp and Paper Division of the War Industries Board to the realization that some simplified and otherwise efficient system of basic weights for paper was absolutely essential for the economic welfare and convenience of the paper making and associated industries.

The American Decimal Standard of Weights for Paper was the outgrowth of that very urgent demand.

The Decimal Standard System was devised largely by Mr. Thos. E. Donnelley as Director of the Division of

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* An address before the paper conference, National Association of Purchasing Agents, Rochester, N. Y., May 18th, 1922.

Pulp and Paper, U. S. War Industries Board about five years ago.

Briefly, the D. S. System comprehends the unit of 1,000 sheets of paper or board, each sheet containing 1,000 square inches as a basis. This may be more readily visualized as 1,000 sheets size 25 x 40. The weight of such a parcel of paper is the "Decimal Standard Number."

It will be seen that the ream is entirely eliminated. Everything is figured by the thousand sheets. The D. S. N. is the "substance" number. For instance—a paper of No. 150 substance would mean that 1,000 sheets each having an area of 1,000 square inches would weigh 150 pounds. It does not make a particle of difference what the grade or quality of that paper might be.

To find the weight of a quantity of odd size sheets, you simply multiply the area of that sheet by the D. S. N. which at once by one single mathematical operation gives the weight of 1,000 sheets. This product applied to the quantity of sheets, naturally produces in terms of pounds the weight of the lot, be it fifteen sheets or fifteen carloads.

There has developed no valid criticism, except that such a system would involve the expense to the merchants of new samples and that during the transition period there might be some duplication of stocks in paper warehouses.

On the other hand the advantages are:

1.—It avoids confusion because:

A—The system is readily explained and easily understood.

B—There is but one substance number for the same weight of stocks for all classes.

C—There would be no confusion between the substance number and the actual weight of the stock, as the substance number is a basis unit and not the weight in pounds of some stock size used as a standard.

2.—It will eliminate the necessity of reducing reams to 1,000 sheets and any errors that might result.

3.—It makes unnecessary the acquiring of technical knowledge of the various sizes by men new in the business or laymen.

4.—It eliminates all chance of misunderstanding as to weight of sheets being furnished.

5.—It is generally convenient especially in the calculations of weights of odd sizes.

6.—It is accurate to the highest degree.

A great deal has been done, more said and many well meaning resolutions passed, relative to and in support of the D. S. system. If, on the other hand, anything of a material nature has been accomplished, it has never come to my attention.

It has been advocated by resolutions passed by such trade associations as the Label Manufacturers' National Association, the National Association of Employing Lithographers, the United Typothetae of America and the Folding Box Manufacturers' National Association. Further a great drive was initiated looking to its universal adoption during the period immediately following the war, by the War Industries Board. Yet we continue to buy and sell paper by the system of substance weights and the good work so well begun has virtually been thrown to the discard.

Should the National Association of Purchasing Agents pass a supporting resolution, their pains and effort will fail of success. To argue to the contrary would be idle.
not fail of success. To argue to the contrary would be idle.
the entire industry at one stroke is impossible of realization.

Then if we as an association are to do this thing, in which others have failed, if we are going to give to the interested industries this system of basis weights — The American Decimal Standard—if we are to bring about the elimination of the old, obsolete, inaccurate and inefficient system now in general use,—it must be done, not by a single stroke, but step by step, one branch of the papermaking industry at a time, firmly but patiently. This of necessity must be our policy. With this as my hypothesis, I have singled out one particular branch of the paper-manufacturers' industry, one that is rampant with complex methods of nominal weight calculations, calculations that are familiar to none but the expert, one whose system of basis weights is grossly inconvenient, inefficient and inaccurate, containing innumerable pit-falls for costly mistakes, the one branch of the industry in greater need of reform than any other. I refer to the box board industry.

As a quantity buyer of box board, coupled with long previous experience as an estimator, I conceived the idea that the book "Gauge Lists and Ream Weight Tables," published by the Box Board Manufacturers' Association and the Eastern Paperboard Manufacturers' Association, was in need of revision. This, long before I had heard of the D. S. System or before that system was even invented.

It goes without saying that there is no good reason why 24 x 36 should represent the basic size for patent coated and kindred grades, while 26 x 38 should be accepted standard for certain other grades. Out of the thousands of tons of box board which I annually purchase, I am reasonably certain that not one single sheet was ever sold to us in the sizes just referred to.

It has been my observation that about three months' time is required to train the average clerk to use the first five Gauge Lists published in this book. Even then, he does not know why he multiplies this by that, except that it is the rule. I am frank to admit that due to lack of practice, it takes me about fifteen minutes to verify the nominal weight charged on an invoice for combination board, whereas it can be done in fifteen seconds. The second invoice comes easier but my point is that at every periodical experience, I have to learn over again.

For example, please follow me in the calculations required to determine the weight of 50,000 sheets, size 42¼ x 56, Bleached Manila Lined Chip, .018 No. 3 Finish:

1. — You find the Sheet, area 42¼ × 56 = 2366.sq. in.

2. — Then you multiply 26 × 38 = 988.

3.—Multiply 988 by the "number" or 100—98800. This is easy, but if the "number" had happened to be 48¾, it would not have been so easy.

4.—Then you get the "count" by dividing 98800 by 2366 or the area of the given sheet. 988000 ÷ 2366 = 41.75 plus. "Count" is 42.

5.—Determine the number of bundles by dividing the total number of sheets (50,000) by the count (42); 1190½ bundles.

6.—Determine the total weight by multiplying the number of bundles by 50 lbs. 1190½ × 50 = 59,525 lbs. Answer 59,525 lbs.

There may be an easier method of arriving at the same result by use of the Gauge List, but it has never been explained to me.

Now the same example by the D. S. System:

1.—42¼ × 56 = 2366 inches.

2.—2366 × 506.08 (D. S. N.) = 1198 lbs. per M. Sheets,

3.—1198 × 50,000 sheets = 59,900 lbs. total.

The most amazing feature of the result is that by use of the Decimal Standard System, the result is 59,900 pounds whereas by the Gauge List method it works out 59,525 pounds, a difference of 375 lbs. Had a mill shipped that lot of 50,000 sheets, it would have lost the value of 375 pounds, which, at $50 per ton, represents $9.38. Had the "count" figured out exactly 41.4 the buyer would have "dropped" about $15. It strikes me that this is a clear case of economy at the spigot and waste at the bunghole.

To prove to you that the result obtained by the D. S. System is correct. I point out that had the "count" been figured out to two decimal places, or 41.75 (which is never done), the number of bundles would have been determined as 1197½. (50,000 divided by 41.75 = 1197½.) 1197½ bundles multiplied by the weight of one, or 50 lbs., makes 59, 875 pounds or within 25 pound of the D. S. result. Still not accurate because the "count" is 41.75 plus. Had it been carried out to three decimals you would probably have arrived within a few pounds of the D. S. result.

I wish to point out that insofar as the billing of paper is concerned, the D. S. System has no application when such billing is applied on a scale weight basis. The higher grades, such as patent coated board, are probably universally sold on nominal or ream weight. As much can be said of the product of many mills making bleached manila lined boards. Irrespective, however, of how the board is sold, ream or nominal weight, the nominal weight must be determined prior to purchase because the converter sells his product by count.

For the prime purpose of determining for ourselves the nature of the reception that might be accorded the D. S. System by book paper manufacturers at first blush, I wrote to two coated paper mills and after a short explanation of the application in their lines, asked them to give serious consideration to the adoption of the D. S. System in their billings.

One mill writes as follows:

"While this is a matter which has our hearty approval from the theoretical standpoint, we are actually able to do but little to initiate such a system, as our product is taken by the jobbing trade and we must cater to their wishes in the matter. Up-to-date, we have never had any expression from them which would lead us to the opinion that they were other than apathetic on the subject."

This attitude I consider representative of that of the major portion of the manufacturing industry and suggests a definite basis for action—the jobbing trade.

The other mill writes:

"Your favor of the 18th inst. received relative to the Decimal Standard System, and since the receipt of it we have been going over this matter quite carefully here and I have made various inquiries among my friends in the paper trade in this vicinity; and while possibly this is something that will be universally adopted in the near future, I do not think from my investigation during the past week or ten days, that it is so far considered, by the paper trade, at least, to be something that should be adopted by them at this time.

"In looking over our own records here we find that if we adopted this system on all shipments to our larger customers since the first of the year we would have been out quite a little item. This of course may be only a coincidence, but it so happened that in figuring out the D. S. Number that the fractions have nearly all been in favor of the purchaser and this leads me to ask: What is the objection to carrying this D. S. Number out to say two decimal points so as to come to a more accurate result?

"Our folks here have figured out a great many examples based on shipments since the first of January, and they claim that there is absolutely no saving in time. Of course, this may be from lack of experience."

This letter raises a point on which I personally am not clear:

Are the present established standard basis of weights, such as 25 x 38-50, 60, 70, etc., to be changed to the extent of the variation effected by the application of a D. S. N. without fraction which will come nearest to producing an equivalent substance number?

If the answer is yes, then I fear our task will be indeed arduous.

If not, then it will be necessary to carry out the D. S. N. to one if not two decimal places. To get the thing started I belive the latter course should be pursued.

For example, the D. S. N. for 25 x 38-50 lb. is given on a list recently published as 105. As a matter of fact, it should be 105.25.

Likewise, the D. S. N. of

25 x 38-60 is 126.3 not 126

25 x 38-70 is 147.35 not 147

25 x 38-80 is 168.40 not 168

25 x 38.90 is 189.45 not 189

I think this phase of the application of the D. S. System should receive the consideration of a committee composed of members who are familiar with manufacturing conditions. It is important that this association put itself on record and lend its moral support to the American Decimal Standard. More than that—we must devise ways and means by active co-operation, looking to its universal adoption.

PAPER INDUSTRY ASKS AID OF CORNELL FORESTERS

The need for classes in vocational education among paper mills of New York State has resulted in a request by the Technical Association of the Pulp and Paper Industry to the extension department of the New York State College of Agriculture at Cornell University to aid in the establishment of such classes through their field staff.

New York has been lagging in the movement for such training of the employees of the paper industry, through the lack of any central state university extension department, though classes have been meeting in the paper mill regions of Massachusetts and Wisconsin for months.

It is the hope of the paper industry, however, that class work can be started in New York which has more paper and pulp mills than any other state, in September, through the extension specialists of Cornell.

The matter has been taken up through the department of forestry of the State College of Agriculture, because of the vital interest of the paper industry in forestry. The American Paper and Pulp Association has led the industries of the country in a campaign for adequate forestry legislation, because the industry is dependent upon the forests. The industry has, through the Technical Associations of the industry in the United States and Canada, spent over $40,000 in the preparation of text books to be used by the employees in the mills, and the negotiations with the authorities at Ithaca have been inaugurated by R. S. Kellogg Secretary of the News Print Service Bureau, who is Secretary of the joint committees on vocational education of the technical organization of the paper industry in the United States and Canada.

With the Woodsmen

WOOD — CORD VS. WEIGHT

Here are some good ideas by B. T. McBain, Nekoosa-Edwards Paper Co., Port Edwards, Wis., in the Paper Trade Journal.

There are many customs still in vogue in the manufacture of paper which to me are as barbarous almost as the eating of human flesh by the cannibal tribes of the South Seas. This is putting it pretty strong, I'll admit, but it must be put in that shape to attract attention. When the attention of the up-to-date manufacturer in other respects is secured, it is easier to drive home the truths of any gospel.

My gospel is efficiency. What is efficiency? Nothing but the application of common sense principles. We are all agreed in this definition,though I believe more sins are committed under the name of efficiency than under the head of murder.

Do any of us purchase aniline dye by measurement? This is only a very small part of the cost of paper to the average manufacturer.

Do any of us buy alum, rosin, soda ash, lime, dolomite, clay, orany other of the minor items used in the manufacture of paper, by measurement? You answer, "No, of course not, for there is no other way known than to buy by weight."

Do any of us buy ground wood, sulphate or sulphite pulps, old papers, cotton linter pulps, or in fact any kind of raw material by measurement, except possibly for the space used in a ship as a basis for freight payment? We can go back to the machinery we all use in the mills. We even paid the freight on that on a weight basis.

Nevertheless, we have gone along all these years buying wood without any known basis for arriving at the item "for value received", which most of us have been signing the past few years when we get the money from Mr. Banker to satisfy the demands of the wood contractor.

How many of us get "for value received" when we turn the bank's money over to the wood merchant?

Some mills are now buying wood on the basis of weight, having arrived at a certain weight as an average cord instead of using the proverbial 4 x 4 x 8, and while this weight may be 4,000 lb. in the case of dry wood "carefully piled," and 5,000 lb. in the case of wet wood, an average or arbitrary weight is used which, while I believe is a step in the right direction, is still subject to almost as great error as the old method, particularly if the wood arrives with the bark on.

Other are now weighing a shipload of wood and measuring the first 50 tons, buying on a cord basis at the average weight of the number of cords which make up this pile of 50 tons. This, too, is a step along the line of progress. But why not get together, gentlemen, and get down to common sense, and if common sense is efficiency, then get down to efficiency methods as we try to do in everything else in connection with our business and insist upon buying only by weight that which we sell only by weight in its manufactured form.

This is no new gospel. It has been brought up before and its apostles are still many, but until all can be converted it will be somewhat difficult to put it over on the wood seller who knows nothing but cord measurement and the scientific piling of as few sticks as possible to make 128 cu. ft. and get by with it.

He who estimates his money the highest, values himself the least.

CHIEF FORESTER ISSUES WARNING

The drought, which has been persistent in the Abitibi region, the upper St. Maurice, Temiskamingue and Lake St. John since the beginning of June is now causing fear to the officials of the Department of Lands and Forests, and last Wednesday Mr. Gustave Piche, Chief Forestry Engineer, stated that though no forest fires had been reported, severe orders had been issued to forest wardens to enforce the regulations very severely. "Compared to last year the conditions now are extraordinarily good as not a single forest fire has been reported for ten days," he stated. However, in view of the persistent dry weather in the districts above mentioned Mr. Piche said that the possibility of outbreaks of fire was entertained. Regarding the estimates of the losses this year compared with last year, it was stated that the losses would only be about a third of what they had been in the St. Maurice district.

FOREST SITUATION ALARMING

In the course of a letter to the Montreal Herald Mr. F. J. D. Barnjum says:

"With regard to my prediction that our wood resources would be exhausted in twelve years, you call attention to the fact that similar statements were made in the Ottawa Valley thirty years ago. My reply to this is that those statements have proved only too true, as what they called timber in those days is past and gone forever, and we are today, as the Boston Herald very truly says, cutting trees that are so small they belong to generations not old enough to protect them.

Not only do I repeat that our present supply will be exhausted in twelve years, but I will go further and state that if we had any consideration for our climate, our agriculture, our stream flow, our wells and springs and our increasingly alarming forest fire situation, we should cease all further cutting of trees in Canada, not in twelve years from now but today, and it takes fifty years to grow even pulpwood trees.

Our continent is already so denuded of forest growth that heavy rainfalls produce freshets, only to be followed by immediate drought which produces the tremendous forest fires recently experienced in Quebec and now in evidence in British Columbia.

In this connection we must keep ever before us that one hundred and fifty million cords of wood, or fifty years' supply, have been destroyed by insects in the Province of Quebec alone; that over one million acres were burned over in the same Province in 1921, and still our Government at Ottawa allows the free and unrestricted export of free land wood, which amounted in 1921 to forty million trees, without even an export tax to help pay for replanting this vast number of seedlings.

The Government of the Province of Quebec, which is the leader of the Governments of Canada in wise forest reforms has with its usual farsightedness and wisdom, forbidden the cutting of undersized trees, except in special cases and where a working plan prepared under the direction of the Forest Service shows that it will not be detrimental to the forest. This measure means that the amount of the cut on Crown lands, in the majority of cases, will be reduced by at least one-half, and as Premier Taschereau recently stated, the paper companies, in order to complete their requirements, will have to buy wood from private fee land owners, and how can they do this if we allow this wood to be exported to the United States?"

To business that we love, we rise betimes and go to it with delight.—Shakespeare.

The Forests and Forestry of Finland

By LAURI ILVESSALO Dr. Phil. Lecturer in Silviculture at the Helsingfors University.

(From Monthly Journal of Bank of Finland.)

FOREST RESOURCES

The forest lands of Europe were divided, after the world-war, among the various countries as follows:

Soviet Russia (including East-Carelia, Ukraine and Caucasia) approx.	153.5	mill. hectares*
Sweden	23.2	” ”
Finland	21.4	” ”
Germany	12.4	” ”
France	9.9	” ”
Poland	8.9	” ”
Roumania	7.6	” ”
Norway	6.9	” ”
Jugo-Slavia	5.9	” ”
Italy	5.3	” ”
Czecho-Slovakia	5.0	” ”
Other countries together	28.0	” ”
All Europe approx.	288.0	mill. hectares*

* 1 hectare = 2.47 acres.

Finland is thus third in Europe regarding the size of its forest area. Calculated in percentage of its total area, its forest area is greater than that of any other country in Europe, amounting to about 62.5 per cent., next being Sweden (56.4 per cent.). Also per head of population Finland has more forest than any other European country amounting to 6.9 hectares; nearest comes Sweden again (3.8 hect.), then Norway (2.6 hect.) and Russia (1.2 hect.). Finland is thus in all Europe the land richest in forest.

This wealth of forest is spread comparatively evenly over the whole country. Greater stretches of land without forest or even poor in forest are not to be found, with the exception, perhaps, of the mountain region in the northern districts. The overwhelming majority of the forests are coniferous, the species composing the same, viz., pine *(Pinus silvestries)* and spruce *(Picea excelsa)* having long enjoyed a good reputation in the world's markets. Spruce forms, in addition, an excellent raw material for the paper industries. The most important leaf-tree, the birch *(Betula verrucosa* and *B. odorata),* is on its part suited to the needs of the veneer and reels and bobbins industries, for furniture-making, tools, firewood, etc. The asp *(Populus tremula)* is eminently suitable for the wood needed in the manufacture of matches.

The Exploitation of the Forests

Natural conditions in Finland favour greatly the exploitation of its forests. The transport of timber from the forests is rendered easy by the covering of snow in the winter, and the thickly branching waterways form a natural network of water-courses, covering he whole of the country, along which logs can be rafted. Cheap water-power is afforded the timber-refining works by the numerous rapids.

There can hardly be another country for which forest has the same deep significance as for Finland. Besides the fact that the home demand for wood in all its form is satisfied, the products of the forests — timber, wood-pulp, paper, etc., — form the most important and largest group of exports by which Finland is represented in the world's far flung markets. The greater part of the capital on which the industries, communications and the economic foundations of the cultural life of Finland are based has been and is still being obtained from abroad for the products of our forests.

In earlier times, tar, hewn timber and firewood formed the greater part of our export from the forests. During the eighteenth century a beginning was made with planks and boards, at first hand-sawn, later sawn in the water-sawmills. Steam sawmills did not come into use before the middle of the nineteenth century. Sawn timber was already at that time the most important article of export, and especially after the discontinuation of the timber duty in England in 1865 did this branch of timber export increase rapidly. An idea of the growth of the sawmills industry in Finland is given by Diagr. 2, showing the amounts of sawn timber annually exported, beginning with 1883*. Coincidently, the home consumption of sawn timber has also increased.

At present, there are over 600 sawmills in Finland, but only a minority of these work for export, the greater number satisfying only the local demand. But on the other hand, many of the export sawmills are considerable institutions. Timber-sawing for export purposes is carried on mostly by large companies, many of which own, besides their sawmills, wood-pulp mills, cellulose, paper and other factories, and further, large areas of forest. The foremost of these sawmill companies are the following:

	Sawmills	Annual output, standards
A. Ahlström Osakeyhtiö	6	90,000
Aktiebolaget W. Gutzeit & Co.	4	55,000
W. Rosenlew & Co. Aktiebolag	2	48,000
Trävaru Aktiebolaget Kemi	3	45,000
Aktiebolaget Ulea Osakeyhtiö	3	35,000
Sörnäs Aktiebolag	3	32,000
Osakeyhtiö Gustaf Cederberg & Co.	1	30,000
Halla Aktiebolag	4	30,000
Hackman & Co.	2	24,000
Aug. Eklöf Aktieboleg	3	22,000
The Brahestad Wood Co., Ltd.	2	20,000

In later times, beginning especially in the nineties, the paper and wood-pulp industries have acquired great significance. Despite the rapid increase in the home consumption of paper the export of the products of these industries has risen enormously in recent years. On the banks of the rapids, great industrial concerns have been erected, those especially deserving of mention being the wood-pulp mills, cellulose and paper factories of the Kymmene Aktiebolag, the Aktiebolaget W. Gutzeit & Co., and the A. Ahlström Osakeyhtiö, which are the greatest in their line in Finland, probably also in Europe. Other companies owning great paper and wood-pulp factories are the G. A. Serlachius Aktiebolag, Aktiebolaget Kaukas Fabrik, Aktiebolaget Tornator, etc. Altogether there were in Finland in 1920 25 wood-pulp mills (annual output about 110 million kilos), 24 cellulose factories (about 300 million kilos per annum) and 31 paper factories (about 220 mill. kilos).

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* During the war, exports in this country were larger than the figures show, as large amounts of sawn timber were taken over into Russia for military use, no reports being made of such to the Customs authorities, as the law otherwise demands.

The Export of Forest Products

The firms engaged in the timber industries have established a mutual organization to watch over their interests, the Suomen Puunjalostus-teollisuuden Keskusliitto (Central League of the Forest Industries of Finland). Besides this, the sawmill, have their own special reorganization.

The amounts and value of the export of the varions industries dealing with forest products are divided among the different branches according to statistics from the years 1913 and 1920 as follows:

	1913		1920	
	Amount	Value	Amount	Value
	Mill. m^3	Mill. Fmk	Mill. m^3	Mill. Fmk
Props, pulpwood and other unprepared timber	2.87	31.51	1.44	151.38
Firewood	1.07	4.27	0.14	11.34
Hewn timber	0.30	7.40	0.07	14.02
Sawn timber	4.21	175.67	3.59	1,369.86
	Mill. kilos		Mill. kilos	
Manufactures of wood	15.13	8.50	19.70	86.75
Wood-pulp, mechanical*	44.91	4.04	82.00	128.67
Wood-pulp, chemical*	75.48	14.41	87.95	302.62
Cardboard	53.73	8.33	40.35	78.79
Paper	145.49	43.27	131.99	556.31
Charcoal, tar, etc.	....	1.67	....	8.21

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* Dry weight.

It will be observed from the foregoing that the most important export branch of the forest industries is at present sawn timber. Close after comes paper, and then chemical wood-pulp (1913 unprepared timber).

The export of sawn timber is directed especially to Great Britain and Ireland; next in order come France, Belgium, Holland, Germany and Denmark. The products of the paper and wood-pulp industries are absorbed chiefly by the same countries, though here the United States appears also as a buyer. Earlier, the export of paper to Russia was considerable and has lately commenced to revive again.

The Care of the Forests

Of the forests of Finland the State owns about 39 per cent., the Church and the communities about 2 per cent., the various business companies about 8 per cent. and private individuals about 51 per cent.

The State forests are situated mostly in the north of Finland. Their administration and care is in the hands of a Government Board of Forestry, established in 1851 and lately re-organized. The forests, also, of the Church, many of the communities, the majority of the industrial concerns and of numerous private estates, more especially those of the larger ones, receive organized care. Generally, the forest owned by the peasant-farmers still leaves much to be hoped for in this respect; a development to the better is, however, discernible among these. The destruction of forest is prevented by the Forest Laws of 1917, which forbid the hewing of a forest in a degree dangerous to its natural regeneration; hewings in young growing pine and spruce forests incompatible with the rational thinning of a forest are also forbidden. Quite recently, the Diet has passed a law dealing with Protection Forests, on the grounds of which large areas of forest in North Finland will in the near future be declared protection-forests, in which cuttings will be undertaken only with great precautions, in order to prevent a sinking of the forest-line.

For the advancement of forestry among the farmers the Government allows the Agricultural and Household Societies (22 in number) subsidies, out of which these pay the salaries of forestry advisers and arrange competitions in forestry. Acting as a kind of Central Forestry Societies for the foregoing societies there are the "Tapio" Society, which publishes a periodical for forestry, the "Tapio", and the Föreningen för skogskultur. Also the officials of the Forestry Boards of the various Administrative Districts, on which the surveillance of the Forest Law of 1917 devolves, give advice to forest-owners in silviculture.

Insurance societies for the insuring of forests are two, the Suomen metsänomistajain keskinäinen metsäpalovakuutusyhtiö in Helsingfors (Finnish Forest-owners Mutual Forest-fire Insurance Company) and the Vakuutslaitos Sampo in Abo (Insurance Office Sampo). At the end of 1920, forests to an extent of 2,212,617 hectares had been insured for a value of 1,056,537,202 Finnish marks. For the insurance against fire of prepared timber a society has been formed called the Finska Sågverksägarnas Brandstodsförening — Suomen Sahanomistajain Paloapuyhdistys (Finnish Sawmill-Owners Fire Relief Society).

Higher education in forestry is given (after the abolishment in 1908 of the Evo School of Forestry, established in 1860) at the Helsingfors University. The time needed for the Forestry-examination is 3-4 years. Examinations in forestry may also be taken for academic degrees. For education in primary forestry there are five provincial schools with a two-year course.

In the year 1909 the Forestry Association of Finland was founded for the advancement of the science of forestry. The impulse of this society has already shown a gratifying revival of scientific study in the matter, the Acta forestalia fennica published by the same showing already 21 volumes, which contain scientific studies in all the different branches of forestry. Since the year 1917, a Government institution, the Forest Research Institute has been in action, comprising among its officials three professors (in silviculture, fores valuation and pedology) each with one assistant. The Institute issues a series of publications of its own, four volumes having hitherto appeared. At the present time a valuation of the forest resources of the country is in progress, so that we can await in the near future trustworthy information regarding the extent of these resources, the present condition of the forests, their production and other important factors in connection with the same

ONTARIO TO TACKLE TIMBER PROBLEM

Premier Drury of Ontario in a speech at Madoc, July 20th intimated that the investigations of timber conditions carried on by the Ontario Government had reached a stage wherein progress could be made in formulating a timber policy.

He spoke of calling into conference "the foremost forestry expert in Canada" and it has been found that he referred to Dr. Judson Clark. Dr. Clark is a graduate of the Ontario Agricultural College, who was at one time in the employ of the Lands and Forests Department of Ontario, and afterward lecturer in Forestry at Cornell University.

He has been in the consulting business on the Pacific coast for some time.

Congratulations to Mr. and Mrs. Harry Buncke of Iroquois Falls, on the birth of a son, July 16. Mr. Buncke is author of the section on Mechanical Pulp in Volume 3 of the Official textbooks.

Job Analysis

This fine articles by Mr. A. D. Wood is an example of the regular — but not ordinary — papers read for discussion at the staff luncheons of the Champion Fiber Co, Canton, N. C. — Ed.

In reviewing the ideas brought out in our former discussions relative to the visualizing of one's job, and the charted analysis of the more and less important duties which together make the sum total of the day's work, the No. 10 job, the No. 5 job and the No. 1 job, there is no doubt in my mind that we were dealing with a subject well worth while, one which it will be profitable for us to reconsider from time to time.

Since the subject, "More about Job Analysis" was assigned to me, I have prepared three papers. The first one went to the waste basket and the second one followed it a week ago Sunday. For this I feel that you should give me a vote of thanks. When once "squared away", I found out that I'd taken in too much territory for a noon day meeting, and I decided that the best way might be for me to tell you something about the way I reasoned things out, which pertain to my job, tell you some of the things which I think have been helpful to me, and then let you all "fess up" in the discussion which follows:

In the first place I think it safe to state that it's not the things we do, so much as the things we don't do, that get us into trouble. In the old Prayer Book of the English Church, printed in 1549, we find in the General Confession which is used at all services, even to this day, the words "We have left undone those things which we ought to have done and we have done those things which we ought not to have done". You will note that the things we leave undone are given first place. The tendency to leave things undone is thus recognized as one of the most outstanding of human frailties and shortcomings, and I have "doped it out" that a Job Analysis is one intelligent way to combat it.

In one way the job of a mill superintendent is like that of the village doctor. His day's work might be roughly divided into four sections. First; he has to make his calls upon the sick, his regular routine work. Second; he has his office hours; Third; he must read and study to keep up to the times and have his own recreation to keep him physically fit, and, Fourth he has answer emergency calls.

We Superintendents must cover our field in the mill, we have some office work, we have our reading, study and play-time and our emergency calls. So in making a "case" of my job, and preparing a job analysis, it seems to me that I am always on the job, just as much as an M. D. in the village. Heretofore, in our job analysis, we began *on the job*, and the question arose; what time does my job begin?

So before making a chart of my duties I made a general outline of what constituted a day's work, and I let my day begin with my first waking moment in the morning. It's a great help if one can begin a day right. For a long time I've realized that a man's mental attitude toward his work counts for a great deal and if I'm going to begin tomorrow right I've got to figure out to-day how I'm going to do it. I don't want to wake up tomorrow morning with the thought that I've got to get up and get down to that "damned" job. So, in the course of today's work, I'll find some one thing which is especially interesting to me, something I'd like to think more about, something I'd really like to do, something I can get a little enthusiastic about, and I file that away in my memory for tomorrow's thought on getting up.

At first I used to jot it down on a card, and put it in my vest pocket with my watch where I could reach out and get it. I never yet wanted to stay in bed after that thought reached me. Within two minutes I wanted to get up and give the matter some wide-awake thought. I can think about it while I'm dressing and fixing the furnace. Sometimes I make some notes while breakfast is being prepared.

Before I leave the house I have a plan outlined of a few of the things I'd like to attend to. Generally these items are listed on a card as there is danger of getting side tracked as soon as one gets on the job. I may find some of my patients, the big fat cook or the little fat acid man, in trouble, but I still have my calling list.

Now, as I start out on my routine work, with my little card, I like to think of Sheldon's teaching. This list I carry is a budget that I have for sale. I'm a salesman, and its my job to sell this stuff to my customers. I know what's in my mind, but I haven't the least idea what my customer, the Wood Room Foreman, my Assistant, the Sulphite Foreman or the Superintendent of Maintenance and Construction is thinking about. My mind is to meet the mind of the other man upon the subject of some improvement; and if we are to come to terms and make a satisfactory deal it's up to me, first of all, to secure his *favorable attention*. If I was going to approach him and try to sell him an insurance policy, and my bread and butter depended upon the sale, I'd do my best to make a favorable impression so he'd listen to me. Why not be as sensible about selling him an idea? There is no set of rules for doing this and sometimes we all guess wrong, but I maintain that it's worth while thinking and planning about, and with practice, the percentage of sales will run high.

Elmo Martin says: "Take an interest in what interests the other fellow if you expect him to take an interest in what interests you". It has been my experience that men on the job are generally interested in anything which they can learn concerning their jobs, how their work is handled in other mills, and in any new devices similar to the ones with which they work.

Babson, in one of his recent letters which is probably one of his best, writes of Hospitality, and its relation to efficiency. He say: "Efficiency is a very temperamental factor. Efficiency and happiness are largely synonymous. Happiness is the result of truth, hopefulness and most of all hospitallity".

He further states: "During the past few years I have been analyzing the characteristics and assets of America's great captains of industry. In beginning this investigation, I thought that the most important things of business were capital, technical training, physical endurance and those other material forces which we so much seek. Careful study, however, convinces me that these tangible factors are of little value. The real assets produced by our captains of industry are the so called intangible assets, among which are thoughtfulness, kindliness, sympathy, hopefulness, all of which could be summed up in the one word hospitality".

Now if we are about to approach a customer with an idea which we have for sale and we have an interest in our man, if we feel toward him with kindness and generosity, it will help us in gaining what Sheldon calls "favorable attention".

If we remember that we are a part of a big machine, the other fellow is a part of the same machine and that friction arises at the point of contact it ought to help. And I believe that the recognition of the responsibility of the other fellow, letting him feel that his work is important is a good oil to use. And if he is always confident that he will receive full credit when the work for which he is responsible is well performed, it will help the run-
Some of you may think that I'm a mighty inefficient
ning of the machine.

example to be preaching this stuff, but I'll ask you to show your charity, be a little hospitable and think how much worse I'd be if I didn't try at all.

There are things in the mill, in our dealings with others, which just pop up and happen so suddenly that we are are likely to say something we don't mean to. When detected by my father in some mischief, it might have been the careless breaking of a window pane or a lamp chimney, he'd get out the strap and I'd begin to whimper; "I didn't mean to do it". I can see him now as he'd reply "did you mean *not* to do it"? I wonder how many of us mean *not* to get the man mad, when we are sending or giving him instructions.

Perhaps we do not get him really mad, but we just irritate him enough so that he feels that there is some injustice done. We take away any enthusiasm he may feel concerning that job of his. We do not mean to do it, but we have opened negotiations with him without first thinking the matter over and deciding upon a course of action, we've been poor salesmen. If our customer trades with us at all it's in the same spirit that the workman in some places used to trade at the old-time Commissary, because there was no other place to trade. (This reminds us of the horse that always bit if we didn't speak kindly before touching her.—Ed.)

I was talking with one of the students in the pulp making class, who works in the wood room. He served in the navy and I asked him how he liked military authority as compared with the mill government. He said, "some of the officers aboard ship were just as nice fellows as a man would want to work for but once in awhile we'd find a bad one". "But", he said, "he couldn't get away with it. The boys would get even with him. I remember one time the Captain went ashore and told an under officer to send a boat for him at a certain time. A half dozen of the crew knew that he'd received the order, and they knew he'd forgotten about it. If he'd been halfway decent to the men they'd have reminded him, but they didn't tell him just so that he'd get a "bawling out".

Any good executive will avoid the cultivation of this spirit among the men. From my own observations I would say that this spirit is most in evidence in the organizations where the boss does the thinking and issues the orders, and the men do the working. I mean where the boss habitually lets it be understood that he'll do the thinking for the others and they are there to do the work. I mean the ONE MAN MILL, where men have no personal interest in the affairs of the Company, for it has been smothered, and I personally feel that there is a lot of wisdom in the motto of Elmo Martin which reads: "A good executive will seldom do anything which he can get done acceptably by some one else who is drawing less money than he is". For when jobs are put up to the executive, if he passes them along to another who can do the work acceptably, the whole works won't go to pieces if he is away for a day or two.

"It's the everlastin' team-work of ev'ry bloomin' soul", to quote Kipling, that we are after, and I hope that the thoughts which I have tried to sell you today may be the ground work for profitable discussion. In order to get your ideas and profit thereby, I am handing you each a sheet with the following questions.

Is the tendency to "leave undone those things which we ought to have done" a shortcoming, the correction of which should be the No. 10 job of the executive, and will the bringing of the matter before us in this way, prepare us for the selling of the idea to others? Will Job Analysis help overcome this tendency?

Is it so that our Jobs are twenty-four hour jobs?

Is the suggestion for the first thought for the morning a good one or have you a better suggestion?

Ought we to start the day with a memo of certain definite ideas which we wish to "sell" to other members of the organization?

It is worth while to consider studiously ways and means of securing favorable attention when we have an idea to "sell"?

Is it worth the effort to keep continually before us the thought that we *mean not* to give offence to the other fellow?

Now fellows, I *mean not* to be offended in any way with the discussion of this paper and in this spirit I invite your candid criticism.

JUNE EXPORTS OF PULP AND PAPER

Canada's exports of pulp and paper in June again showed considerable increase over the previous month; every item listed by the Department of Trade and Commerce showing a gain over the May figures with the exception of bleached sulphite pulp.

The total value of the pulp and paper exports in June was $10,534,876, compared with $8,522,830 in May and with $6,788,32 in June, 1921.

The largest increases were shown in book paper, 1,214 cwts., compared with 562 cwts. last month; newsprint, 1,729,585 cwts., compared with 1,515,657 cwts.; mechanical pulp, 751,121 cwts., compared with 238,244 cwts., and unbleached sulphite, 430,016 cwts., compared with 225,537 cwts.

The figures for the month of June, 1922 and 1921, are as under:

PAPER

	June, 1921		June, 1922	
	Cwts.	Value.	Cwts.	Value.
Newsprint	847,604	$4,295,181	1,729,585	$6,136,649
Book	1,743	20,546	1,214	7,564
Other paper and manufactures	....	247,781	......	613,311
Total paper	......	$4,563,508	......	$6,757,524

PULP

	June, 1921		June, 1922	
	Cwts.	Value.	Cwts.	Value.
Sulphate (kraft) . .	146,824	$ 541,488	262,175	$ 801,395
Sulphite, bleached...	118,721	602,200	238,375	920,652
Sulphite, unbleached	187,250	711,664	430,016	1,086,909
Mechanical	196,090	370,072	751,121	968,696
Total	648,885	$2,225,424	1,681,687	$3,777,352

The principal countries of destination of these exports in June, 1922, were:

	Paper	Pulp	Total
United States	$5,424,047	$2,605,512	$8,029,559
United Kingdom..	302,775	732,857	1,035,632
All other	1,030,702	438,983	1,469,685

Exports of pulpwood in June were 75,897 cords, valued at $815,155, compared with 75,702 cords in May, valued at $740,287.

For the first three months of the fiscal year ending June 30th there is also a considerable increase in pulp and paper exports over the corresponding three months of 1921, as shown in the following figures:

PAPER

Three months

	1921		1922	
	Cwts.	Value.	Cwts.	Value.
Newsprint	2,680,430	$14,219,467	4,475,288	$15,869,712
Book	9,421	123,251	1,811	12,688
Oth. paper & mfrs...	......	1,215,691	......	1,346,876
Total	......	$15,558,409	......	$17,229,256

PULP

Three months

	1921		1922	
	Cwts.	Value.	Cwts.	Value.
Sulphate	402,977	$1,630,003	676,913	$2,076,515
Sulphite, bleached..	247,801	1,365,187	738,055	2,682,080
Sulphite, unbleached.	473,392	1,855,307	821,899	2,134,053
Mechanical	586,459	1,255,284	3,355,189	$8,318,809
Total pulp . . .	1,710,629	$6,106,284	3,355,189	$8,318,809

Total pulp and paper exports for these three months in 1922 amounted to $25,548,065, compared with $21,664,693 in 1921.

He who listens not to his stomach will mind the doctor.

Paper Club Had Fine Picnic

The Montreal Paper Club held their first annual picnic at Beauharnois last Saturday. A party of thirty-five left Windsor Station early in a special car, which was dropped at Beauharnois. Here the visitors were welcomed by Manager Crabtree and others and escorted to the paper mill.

The party was divided into small groups at the mills and an inspection was made which proved a most interesting experience especially for those who had sold paper for years but did not have any conception of the great care which is necessarily taken in the manufacture of high grade papers which several of our Canadian mills are capable of producing.

The visitors were shown through the mills from top to bottom and saw the opening of the bales, the threshing of the rags, the sorting by hand, the cutting into small pieces, and the charging of the rags and the chemicals into the rotary digester, or rag boiler. A boiler which had been cooking the rags under steam pressure for about twelve hours was being emptied and these rags, though they looked dirty, were found to have been thoroughly cooked so that dirt and color had been changed into compounds that would wash out readily in the next operation.

The cooked rags were placed in washing engines where fresh filtered water was added and the dirty water removed. When all removable dirt had been taken away, a solution of bleaching powder was added and in a few minutes the rags, which during the process of washing had been much raveled to a mass of string and thread, soon took on a snow white color that was most attractive. The white mass was then put in drainers where the water and bleach solution drained away and the batch of rags was then ready for the next process.

The principal importance in the manufacture of high grade papers is mostly given to the beating of the fibres by which process the rags are completely resolved into the small fibre of the cotton or the spruce and so changed in their principal characters that the mass of fibre when diluted and passed to the paper machine will felt together and form a strong uniform sheet of paper. During this operation the rosin sizing is carried out, which results in giving the paper the character and quality of resisting the spread of ink or the penetration of water. In the beater also an addition of coloring matter may be required. For the high grade papers only a high grade of cotton or linen rag is used but in medium quality paper the stock may be chemical woodpulp.

From the beater the stock flows down to a stuff chest where it is kept stirred until ready for the paper machine. Before going to the machine the stock is screened and passed through a jordan or refining engine where the fibres are brushed out and given a final shake-up which thoroughly prepares them for a kind of paper that the machine is to produce.

In the Howard Smith Paper Mills at Beauharnois are two paper machines, one of which was recently built by the Dominion Engineering Works at Lachine. One of these machines we saw making the highest grade of all linen bond while the other was making the well-known Progress brand of this company. The linen bond was being sized with a solution of glue and cut into sheets which were later put into a loft and dried at a temperature of about 130 degrees for several days. This brings out the very highest quality which is characteristic of tub-sized, air dried, rag fibre papers. The Progress bond was also sized with glue but was dried on steam cylinders and finished on the machine by passing the web through a stack of calenders. The dried paper when finished was slit into strips of the desired width and these strips wound on rolls which were taken to the finishing department and cut into sheets of any desired length.

The air dried sheets are finished in several ways, some of them are passed through what is called a sheet or breaker calender but others are finished on the plater which gives them the various fancy or special finishes that are characteristic of stationery today. In order to produce these special effects the paper is piled alternately with a sheet of linen or specially finished board and a "book" or pile about 4 in. thick made up in this way is passed between the rollers and given a very heavy pressure. By having the paper contain a certain amount of moisture the surface is soft enough to take the right impression of the crash, linen or other sheet of material that is placed between the sheets of paper.

After the paper is carefully sorted, counted and cut to the correct size it is wrapped by reams and is then ready to be boxed and loaded in cars for shipment.

A Fine Outing by the Riverside

After the inspection of the mill there was no one who did not confess to having a good appetite and all were ready for a short walk to the grounds of Mr. Rodier and enjoy an outdoor picnic by the banks of the St. Lawrence River. A number of girls from the mill had preceded the party and spread a table with good things to eat and drink. The visitors, together with a number of men from the plant, found seats on the grass or the ledges and were speedily served with a most appetizing lunch. The thanks of the Club were extended to the young ladies who helped and a hearty vote of thanks to the Howard Smith management for the very happy reception that was given and the very enjoyable time that everyone had at Beauharnois.

After lunch had been over for a sufficient length of time a program of sports was started and to say that it was enjoyed is to put it very mildly. Almost every kind of contest was staged and nearly everyone took part in some event. The following was the result of the races and contests where a record could be kept but broad jumping and quoits went on practically the whole afternoon.

The tug of war was the first stated event and the team winning this consisted of Pichette (Jos. Fortier & Son), Hampshire (E. B. Eddy), Hubley (Federal Paper Co.), Amesse (National Blankbook Co.), Jas. Home and Jack Home (Beveridge Supply Co.)

The 100 yards dash was run in three heats and was won by Robson (Howard Smith Paper Mill) with Hubley and Home second and third. The potato race was a scream and was won by Jack Home with Piché (Garden City Press) and Jack O'Connor (H. S. P. M.) second and third. The shot (stone) put brought out some husky contestants and was won by Jack O'Connor with 30 ft. 2½ inches. Hampshire acme second with a put that measured 29 ft. 2 in. behind the winner and Jack Larkin (Federal Paper Co.) third with a distance 28 ft. 10 in. The sack race caused a great deal of amusement and was won by Piché with Brown (T. B. Little), second and Jas. Home third. Another comical event was the fat man's race which was won by Dave Crabtree (H. S. P. M.) with Phil Burns (W. V. Dawson), second and Pichette third. There was some question as to whether Crabtree was qualified as a fat man until he proved his weight. The three legged race was won by the Home brothers who were closely followed by Paul Rodier and Jack O'Connor (H. S. P. M.)

While the party enjoyed either a swim in the St. Lawrence or watching those who so disported themselves the caterers were setting the tables for supper and this ceremony practically cleared up the eatables. The afternoon's fun ended with a presentation of the prizes by J. N. Stephenson, Editor of the *Pulp and Paper Magazine* who complimented the Club on the success of their outing and expressed the gratitude of the Club to the Rolland Paper Company and the Howard Smith Paper Mills for their generosity in providing the prizes. In acknowledging his prize as winner of second place in the fat man's race, Mr. Phil Burns, who has been in the paper game for upwards of forty years, expressed himself very strongly in his belief that the Paper Club should have twice as many members as it has, and that it would prove to perform a service for the paper industry that was not now being properly appreciated.

While waiting for a train back to Montreal the party enjoyed an evening of community singing. The general feeling was expressed in the wish that there should be at least one more picnic and that these outings should form a regular feature of the annual program of the Montreal Paper Club.

PAPER DAY AT THE EXPOSITION

Each year the National Exposition of Chemical Industries, the eighth annual exposition of which will be held this year at the Grand Central Palace in New York, during the week September 11-16 has had a large number of exhibits of especial interest to the Pulp and Paper industry. These have consisted of the products of industrial application embracing the materials entering into the paper itself from fillers, sizes, dyes, bleaches, chemicals, through processes for the treatment of the pulp, the manufacture, and even the finished paper: the machinery important to the paper industry is there and instruments of control, not only those for the paper machines but for every phase of production even to the production of steam in the power plant, watchdogs over the consumption of coal and its combustion.

This year there will be many interesting exhibits and a novel feature has been introduced. The Technical Association of the Pulp and Paper Industry which has held several meetings, including the regular fall meetings, at the past Expositions, will hold a special meeting one day during the week. This will be known as Paper Day, and the novel feature is the program which has been arranged. Like all technical and scientific societies, the T. A. P. P. I., meetings always have a program composed of papers presented upon scientific and technical subjects but in which no commercial connection or mention may be made known. But this program which has been arranged, the date for which will be announced later, is comprised of speakers chosen from among the exhibitors. The program will be technical and scientific and while mention of commercial articles will be permitted, the speakers, who are experts in their fields and competent to give a broad discussion of the subject they treat, will keep the discussion free of selling talk. The program as arranged follows:

W. C. Edge (Paul B. Huyette Co.)
"Safety and Efficiency Appliances for the Boiler Plant"
E. J. Trimbey (Trimbey Machine Works)
"Trimbey & Tibbitts Proportioning and Metering System for Paper Stock."
Geo. L. Dickey (Industrial Filtration Corp.)
"Rotary Filters for Washing of Paper Pulp and for Filtering and Washing Caustic Lime Mud." (Illustrated)
R. G. Walker (Oliver Continuous Filter Co.)
"Efficiencies and Economies in Washing Black Liquor from Digested Soda and Sulphate Stock."
L. D. Mills (The Merrill Co.)
"The Merco Nordstrom Plug Valve."
H. S. Thayer (Atlas Electric Devices Co.)
"Testing Colored Materials for Fastness-to-Light."
A. E. Campbell (The Schaeffer & Budenberg Mfg. Co.)
"Instruments for Promoting Efficiency in the Paper Mill."
H. C. Phelps (Uehling Instrument Co.)
"The CO_2 Record of Combustion Efficiency"
Harry Carlson (Sandvik Steel, Inc.)
"Steel Belts and their Application to the Solution of Conveying Problems."
H. Austin (Ernest Scott & Co.)
"Scott Evaporator as Used in the Pulp Mill for Recovering Soda from Spent Liquors."
F. M. Rockwell (Willson Goggles, Inc.)
"Dust Protection; with Particular Reference to the Use of Respirators."

All pulp and paper men of Canada, even though not members of the T. A. P. P. I. are invited to attend this meeting while they are at the Exposition.

L. G. Chase (Yarnall-Waring Co.)
"The V-Notch Meter and its Application to the Paper Mill"
W. D. Mount (Glamorgan Pipe & Foundry Co.)
"Continuous Causticising with Lime Recovery and Reuse."
Jerome D. Stein (Grinnell Co.)
"The Grinnell Dryer Applied to Wall-Paper and Coated Paper."

PRAISE FROM ENGLAND

"Paper Making", London, says of the official textbooks of the Industry:

"The work is well and lucidly written, and is very exhaustive. In spite of its voluminous nature, there is no padding, and the information is given in as condensed a form as is compatible with intelligibility. When completed in the five promised volumes, this work will take its place as a standard manual, invaluable to the student, and the most excellent of books of reference for the pulp maker and paper manufacturer."

WAXED PAPER COMPANY ABSORBED

The Appleford Company Ltd., of Hamilton has been formed with an authorized capital of $1,500,000 to purchase the capital stock of the Appleford Counter Check Book Company Limited, of Hamilton, and the British American Wax Paper Company which was the first of its kind in Canada and has been operating successfully for more than sixteen years.

DON VALLEY RECONSTRUCTION RECORD

To have stockrooms, boiler house, rotary and beater room destroyed by fire, and to be producing paper again inside of a month is a good record, and we noted it recently. We now find that all the labor of reconstruction was carried on by the regular employees, and therefore there was no loss of time, either in the work or the pay list. Further, there were no accidents, and this recalls the fact that not long ago we reported the winning of the Safety flag and shield by this mill for 1921. To carry on the work of pulling down shaky brick walls and half burned beams and to remove and rehang pulleys and shafting under stress, without mishap, is a fairly good indication that the safety habit is a good one.

Technical Section

ABBREVIATED AND FULL TITLES AND ADDRESSES
Of the Journals From Which Abstracts Have Been Prepared For This Issue

Chem. Abs.	Chemical Abstracts. Charles L. Parsons, 1709 G St. N. W., Washington, D. C.
Chimie et Industrie	Chimie et Industrie. 49 Rue des Mathurins, Paris, France.
Electrician	The Electrician. Benn Bros., Ltd., 8 Bouverie St., London, E. C., England.
Mon. Papeterie Belge	Le Moniteur de la Papeterie Belge. Jean Lecluselle, 68 Rue Edmond Van Cauwenbergh, Bruxelles, Belgique.
Paper	Paper. 251 West Nineteenth St., New York City.
Paper Ind.	Paper Industry. 356 Monadnock Block, Chicago, Ill.
Paper Mill	The Paper Mill and Wood Pulp News. L. D. Post, Tribune Building, 154 Nassau St., New York City.
Paper Trade J.	Paper Trade Journal. 10 East Thirty-ninth St., New York City.
Papeterie	La papeterie. 9 Rue Lagrange, Paris, (5°), France.
Papier	Le Papier. 16 Rue du Rocher, Paris (8°), France.
Pulp and Paper	Pulp and Paper Magazine of Canada. Gardenvale, Que., Canada.

ERRATA IN ABSTRACTS
Pulp and Paper Magazine. January to June 1922

Page	Col.	Line	
15	1	3	Instead of **Fekaniska** read **Mekaniska**
166	1	23*	Instead of **301-301** read **301-302**
209	1	15	Instead of **Crunewald** read **Grunewald.**
234	2	1	Instead of **The Testing of Paper. U. S. Bureau of Stand-** read **Use of Iodine in the Microscopical**
262	2	1	Instead of **M-4** read **A-17, M-11**
263	2	35	Instead of **Valez** read **Vallez**
		32*	Instead of **M-4** read **M-12**
			Instead of **CO** read **Co_2**
307	1	13*	Instead of **R-6** read **L-8**
			Instead of **Wm. B. Reinicke** read **Wm. R. Reinicke**
		9*	Instead of **R-6** read **L-8**
330	1	29*	Instead of **SEVEN** read **SVEN**
	2	7	Instead of **SEVEN** read **SVEN**
		10*	Instead of **R-1** read **K-O, R-5**
439	2	24	Insert **Cleaner** between **Felt** and **for**
442	1	34*	Instead of **11** read **II**
		1*	Instead of **WEATON** read **WHEATON**
458	2	8*	Instead of **CLEVELAND** read **CLELAND**
481	2	16	Instead of **Measuring Pulpwood and** read **Measurng Pulpwood and Paper Supplies**
501	2	12*	Instead of **366,535** read **336,535**
526	2	4	Instead of **1921** read **1922**

*From the bottom.

Review of Recent Literature
A.—Properties Chemistry and Testing of Raw Materials and Finished Product

A-2 Stamso Cotton Linter Pulp. STEWART E. SEAMAN, Stamsocott Co., Hopewell, Va. **Paper Trade J.**, ixxiv, No. 15, 265-269, (April 13, 1922); **Paper Ind.**, iv, 277-281, (May 1922); **Paper**, xxx, No. 17, 88-92, (April 19, 1922). A description of the method of manufacture of cotton linter pulp, and of its use in the manufacture of high grade papers. -A.P.-C.

A-5; D-1 Sedimentation Control of Groundwood. W. A. MUNRO. **Paper Trade J.**, lxxiv, No. 15, 235, 237, (April 13, 1922); **Paper**, xxx, No. 7, 45-48, (April 19, 1922). An account is given of the work done by the Committee on Ground-Wood of the T. A. P. P. I. on the sedimentation control of groundwood. Of the two types of Freeness testers in general use, the two orifice type is recommended for ease and accuracy. For stock control by the freeness tester, it is recommended that one man on each shift have entire charge of the apparatus and do the testing. First the stock from the service box of the paper machines is tested (in triplicate), then that from the groundwood deckers and from the sulphite deckers (in triplicate), and finally that from each stone (in duplicate). -A.P.-C.

A-7 T. A. P. P. I. Methods for the Testing of Alum, Lime, and Crown Filler.

A-11 Recommended Specifications for Lime and Limestone for the Manufacture of Sulphite Pulp. Paper Trade J., ixxiv, No. 15, 271,273,275, (April 13, 1922); **Paper**, xxx, No. 7, 114, 116, (April 19, 1922); **Paper Ind.**, iv, 269, 271,(May 1922). Specifications as revised to March 15, 1922. -A.P.-C.

A-12 N. FOLKE BECKER. **Paper Trade J.**, lxxiv, No. 15, 307-313, (April 13, 1922); **Paper**, xxx, No. 7, 38-44, (April 19, 1922)**Paper Ind.**, iv, 546-551, (July 1921 Report of the Committee on Standard Methods of Testing Materials, describing methods for the analysis of alum, lime for causticizing, and crown filler, with recommendations that they be adopted as official by the Association. -A.P.-C.

A-14 Industrial Research on Press Board. A. P. M. FLEMING. **Electrician**, lxxxvii, 672-674, (1921); **Chem. Abs.**, xvi, 830, (March 10, 1922). An account of tests made on press boards of various compositions. The following results were obtained on (1) wood pulp board, (2) 90% cotton board,(3) jute-hemp board (4) jute-cotton (elephantide) board, respectively: breakdown voltage in volts per thousandth of an inch in air after drying at 105° for 3 hours, 219, 280, 280, 325; specific gravity 1.15, 1.175, 1.22, 1.2; tensile strength 3.2, 3.63, 4.4, 4.52 tons per square inch; water absorption after 24 hours 90, 83, 122, and 90% of the weight. -A.P.-C.

A-15 Problems of Cellulose Chemistry. EMIL HEUSER. Translation by C. J. West in **Paper**, xxix,

(Continued on Page 634)

British Trade News

(From Our London Correspondent)

London, July 18, 1922. — During the months of April and May I announced at intervals particulars of the negotiations about hours and wages in the paper mills, between the employers and employees. Throughout, it was an up-hill and down dale fight on both sides. The workers were out for all that they could get and the mill owners were out for knocking down the wages of the workers, so as to enable them to relieve the cost of production, as well as facilitate them in meeting competition. Now that all the exciting moments are over and everybody has settled down peacably to work again, it is interesting to hear what the millowners have to say on the negotiations. I quote them for the edification of Labor in Canada and I go further and say that better and more clean fighters for the Labor movement could not be found in the world than the men — a mere handful — who look after the interests of the British mill workers.

"Although at one point of the proceedings, we came very near to a break-down", says the President (Mr. Seddon), "I should like to express a feeling, which I know is general amongst those who have been engaged in the negotiations, that we are fortunate in the paper industry in being free from the unreasonable attitude on the part of the representatives of the employees which unfortunately characterises some labor disputes, and I wish to pay a tribute of respect to the method of procedure on the part of those who have carried out this agreement on behalf of the workers. They have, as is only natural, exerted themselves to their utmost in obtaining the best terms that were within their reach, but in their efforts they have shown themselves reasonable exponents of the requirements of their members and straightforward advocates of what they considered to be their legitimate claims, without introducing into the debate any symptoms of the advanced theories of extremists. I think we can claim that this spirit of sound and equitable dealing is in a great measure due to the feeling of sound mutual trust and appreciation, which is the outcome of several years of co-operative effort on the part of both sides to arrive at a fair basis of adjustment of our relations toward each other."

This tribute from Capital to Labor is not usual in a great industry — but it is well deserved. After all, the round table is the place to settle disputes, but it requires men with fair commonsense to participate in such conferences. It is questionable if Canada ever had such an intricate dispute to settle as the one just solved in British mills and I commend the British Labor way of doing things to Labor and employers elsewhere.

The Three-Shifts

While on mill subjects it is interesting to see how the 3-shift System is working in the mills. It will be recalled that after the war the British mills turned from the 2-shift to the 3-shift without any decrease in the normal earning capacity of the worker. But the shorter hours while proving a boon to the workers, naturally mean additional cost to the millowners — and the consumer. This is an important statement in view of the fact that in America and several European countries the question of the 48-hours week is being reconsidered. Germany is wending away down to 8-hours a day. In Switzerland the week consists of 52 hours. It is stated on high authority in British mill circles that it will take time to decide whether, or not, the mills can stand the 3-shifts. At present employers cannot prophesy, but in the event of a trade revival they will put great reliance on their workers' co-operation to produce results which will enable them to retain the advantages which they have received. It is felt that profitable results are dependent upon the loyalty and fair service of the workers and smooth working in the mill is dependent upon the tact, discretion, judgment and energy of the management.

The Millowners Federation are undecided on the policy of the 3-shifts; they ought to know from actual experience. Some weeks ago I was in Stockholm and I heard a resolution proposed and passed by the International Cotton Congress declaring that the shorter working week is economically unsound and against the interests of both millowners and workers. It is also worth recording that in all the big British newspapers the 3-shifts are in vogue, as well as in the paper mills. Mr. Seddon, (the President of the Employers' Federation of Papermakers), says: "We cannot set up an artificial wages standard when faced with Continental competition at lower rates and longer hours, and this applies not only to paper, but to all industries."

The position today is that the 3-shift system is on its trial, for good, or for bad, and a good rush of trade lasting twelve months will enable millowners to express an opinion. On the other side, workers agree with the 3-shift, as it makes work go round and keeps down in some degree unemployment.

Paper Slowly Recovering

Turning to the outlook in the paper industry in the United Kingdom, it may generally be stated that the outlook is more hopeful. Serious losses have been sustained —more than some people imagine—but there are now signs of an improvement, almost imperceptible it is true, and the small margins in prices obtained are more hopeful.

The Trade Board states: "The paper trade has been slowly recovering with the improvement in the state of industry generally. Exports in May were higher than any month since January 1921. The price of chemical wood pulp has been rising and this is considered to indicate a further probable increase of production. While British papermakers are somewhat better employed, there has been an increase in imports of paper from oversea. Imports show an advance on a year ago in all grades, packing paper and straw boards, standing out prominently. The principal cloud on the horizon of the paper industry is the threat of industrial trouble in the printing trade."

One thing can be said and that is we are not going back to the experience of 1921. We are slowly, but surely forging ahead. Though the export trade has thrived somewhat the figures for the past six months' trade are not discouraging as the following comparisons, January-June, show: 1922, 44,747¾ tons; 1921, 37,630½; 1920, 48,434.

The values for 6 months in the 3 years are as follows: £2,984,314; £4,550,776; £4,535,653.

The imports of paper for the same period show, for the six months, January-June, last they were double those of 1921.

Canadian Pulp

During the last month good shipments of unbleached sulphite, and ground wood (moist) have arrived from Canada. About 495 tons of chemical (wet) reached Aberdeen from Port Alfred.

Bleached sulphite is now quoted £18 10s; easy bleaching £12; newsprint sulphite £11; Unbleached soda £12; soda kraft £11 15s. £12; groundwood (moist) £4 and dry £7 17s. 6d. There is a fair demand all round for pulp and prices are firm.

It is unfortunate that men will allow "good enough" to keep them from the best.

PULP AND PAPER NEWS

Mr. Charles L. Wilden was entertained at dinner at the Place Viger Hotel, Montreal, on the night of July 20 by the staff of Dawson Brothers, Limited. The occasion was the departure of Mr. Wilden for England. He was presented with a gold chain and attachment engraved. Mr. W. E. Dawson, who presided, made some complimentary allusions to the energy displayed by Mr. Wilden during his residence in Montreal.

The Jamieson Engineering Co. of Vancouver, B. C. have been appointed Western Representatives for Porritts and Spencer (Canada) Limited, Hamilton, Ontario, manufacturers of Pulp and Papermaker's Felts.

Ezra Butler Eddy, grandson of E. B. Eddy, who founded the immense pulp and paper works in Hull, which still bear his name, died at the family homestead on Aylmer road last week, in his 32 year. He had been living in New York for the past twelve years, and only returned to Canada in May last. During the great war he served overseas with the United States Naval Air Force, doing duty in the North Sea and on the Irish Coast. Eddy was divorced from his first wife, Maud Allen, of Ottawa, in New York, early this year. Later he married Miss Carol Maguire, of Philadelphia, Pa., a well-known violinist, who survives him. While in New York, Eddy was in the employ of the McCann Advertising Agency.

In spite of adverse weather conditions for the past month, progress on the railway from Iroquois Falls to Hughes has been quite satisfactory. By the end of this month the first half mile of steel will have been laid. The line is all cut out with the exception of a couple of miles which offers no difficulties. The hard end of the work is from the Woods Office to the top of the gully across the river including the bridge. The heavy rainfall has made cutting and filling a difficult proposition but the work is now under way. The bridge too, was delayed owing to high water, but work is getting along nicely now.

There are stations for groups of men all along the line from the Falls to Hughes and there rae about three hundred men scattered among these different stations.

The equipment of the road will include one seventy-ton rod locomotive, one forty-two-ton geared locomotive, 100 forty-one foot standard freight cars equipped with air brakes, etc., and a few box cars, a snow plow, gas speeder, and a telephone line the whole length of the road.

Spruce Falls Buys Pulp Drying Machine

The Spruce Falls Company of Neenah, Wis., have recently placed an order with The Karlstads Mekaniska Werkstad, of Karlstad, Sweden, through The Pulp and Paper Mill Accessories Ltd., for a 154 inch Fourdrinier Pulp Drying Machine, to be installed in their new 100 ton Sulphite Mill at Kapuskasing. This machine embodies the very latest improvements in this kind of machine, for which The Karlstad Company have a world-wide reputation.

Pulp and Paper Mill Accessories Ltd., are the sole selling agents in Canada for the Karlstad lines of Pulp and Paper Mill Machinery, and they have recently acquired the services of Mr. J. D. Volckman to handle the sales department of their business.

THE ORGANIZATION OF LINCOLN MILLS LTD.

We recently noted amalgamation of the Lincoln Paper Mills Ltd., with the Canadian Pulpwood Corporation. This deal has now been completed and the new concern will be called the Lincoln Mills Ltd., and will include both the Lincoln and Lybster Mills.

Following are the officers of the new Company:—

President — Mr. J. J. Warren, President and Treasurer of the Harmon Paper Company, Brownville, N. Y. President and Treasurer of the Warren Parchment Company, Dexter, N. Y., Vice President of St. Regis Paper Company, Watertown, Deferiet, Herrings, N. Y.

Chairman Board of Directors — Mr. Ferris J. Meigs, New York City.

Vice Presidents — Mr. Walter Meigs, Mr. Ernest A. Sterling, New York City.

Treasurer — Mr. J. Gregory Smith, St. Albans, Vermont.

The Canadian Pulpwood Corporation has offices at Little Cascapedia, Quebec with timber limits in Gaspe. Continuous supply of high grade wood is thus assured the new company, which will carry on as usual in both pulp and paper mills at Merritton, Ontario, with no change in the operating staff under the managership of Mr. K. S. Maclachlan.

Mr. A. S. Woodruff, the late president, has, after long service, retired from active management, while still retaining with his brothers a considerable interest in the new concern.

PRINCE RUPERT PULP

Vancouver, B. C., July 20.—Legal proceedings have been entered here on behalf of the J. S. Emmerson estate, looking to foreclosure on the assets of the Prince Rupert Pulp and Paper Company, for themselves and other holders of first mortgage bonds totalling $800,000. The plaintiffs ask the appointment of a receiver for the company, which is alleged to have defaulted in payment of interest this year. The Montreal Trust Company, as second mortgage bondholders, are named as co-defendants.

A. F. Sutherland, of Vancouver, and George W. Gay, of Texas, are the only directors still holling office in the firm. Its annual meeting called for last Wednesday, was adjourned for lack of attendance and no officers could be elected for the company.

PULP COMPANY HAS ASSIGNED

The Quebec-Saguenay Pulp Company, Limited, made an assignment under the Bankruptcy Act in Superior Court this morning. It is stated, in a resolution passed at a meeting of the directors of the company held yesterday afternoon, and recommending that the company make an assignment, that there were actions pending against the firm for $25,434.16, and that other creditors had threatened suit.

The statements of operations for last year showed a loss of $65,753.54, the resolution says, it is advisable to be declared insolvent. Turcotte and Merrell are named trustees.

No. 23, 7-10, (Feb. 8, 1922). Abridged translation by John L. Parsons in **Pulp and Paper**, xx, 389-391, (May 11, 1922). A brief review of some of the more recent contributions to the chemistry of oxycellulose (Pringsheim), hydrocellulose (Ost), and the constitution of cellulose (Hess). -A.P.-C.

C.—Wood Preparing and Equipment

C-2 Waste Bark For Fuel. G. D. BEARCE. **Paper Trade J.**, lxxiv, No. 13, 51, (March 30, 1922); **Pulp and Paper**, xx, 296, (April 13, 1922); **Paper**, xxx, No. 7, 28, (April 19, 1922). From News Print Service Bureau Bulletin. Brief discussion of the utilization of bark as fuel. Bark from drum barkers carries about 75% water, and by pressing it to a water content of 50% the calorific value of the material is increased 250%. In a mill using 200 cords per day, there is available as fuel about 30 cords of bark, with a bone dry weight of about 30 tons. If the bark has a water content of 75% it is equivalent to about 9 tons of coal; while with a 50% water content it is equivalent to 16.3 tons. This clearly shows the value of a bark press. -A.P.-C.

D.-Ground Wood Manufacturing and Equipment

D-4 Relative Efficiency of the Automatic Magazine Grinder as Compared with the Pocket Type Grinder. JOHN J. CASE, Baker Manufacturing Corporation. **Paper Trade J.**, lxxiv, No. 15, 261-265, (April 13, 1922); **Paper Mill**, xlx, No. 14, 85, 88, 90, (April 15, 1922); **Paper Ind.**, iv, 94-97, (April 1922); **Paper**, xxx, No. 7, 84-88, (April 19, 1922). From a comparison of magazine and pocket grinders, the author concludes that the former possess the following advantages over the latter: maximum production per horse power consumed lower labor cost per ton of pulp, partial steaming of the wood at no additional expense, low cost of maintenance and repairs, use of 4-foot wood eliminating at least one re-sawing operation, cleanliness of grinder room, elimination of considerable labor difficulties, use of wood up to 30 inches in diameter, saving in floor area foundation work. -A.P.-C.

D-4 The Efficient Production of Mechanical Pulp ADOLPH F. MEYER, Minneapolis, Minn. **Paper Trade J.**, lxxiv, No. 15, 215-233, (April 13, 1922); **Paper**, xxx, No. 7, 58-66, (April 19, 1922). A discussion of the means for operating any given water-wheel installation most efficiently from the point of view of speed control, showing the necessity for proper regulation of the speed of the water-wheel through the grinder itself, the merits and reason for the success of the Meyer governor the causes of the more efficient production of mechanical pulp by its use, the reason why a centrifugal pump alone is not a satisfactory pulp-grinder governor, the effect of gate opening on the power delivered to the grindstones by the waterwheel, variations in effective grinding load. The author also discusses the efficiency of motor-driven and of water-wheel-driven grinders and reaches the conclusion that electrification of pulp mills in operation, or to be built, at the power sites, is uneconomical except under the most unusual circumstances, as properly governed water-wheel-driven grinders can produce groundwood far more economically than regulated motor-driven grinders can.

D-4 Continuous Grindstone Dresser. U. S. A. Patent 1,413,060, F. W. ROBERTS, assignor to ROBERTS MANUFACTURING CO., April 18, 1922. A small jet of water (or other liquid) is projected against the surface of the stone at a high pressure in such a manner that the particles of foreign matter are washed out and small particles of the stone are washed away, thereby producing a cutting surface. The jet may be used at intervals or (preferably) kept in continuous operation and moved across the surface of the stone. The water pressure (about 150 to 200 pounds per square inch) is regulated according to the hardness of the stone and the surface required. The water and particles from the stone are removed by means of a suitable trough thus keeping them out of the stock. A.P.-C.

D-4 Device for Regulating the Feed of the Presses of Grinder Pockets. Fr. Patent 532, 702, J. M. VOITH **Papeterie**, xliv, 210-214, (March 10, 1922); **Papier**, xxv, 120-122, (March 1922). The fluid which exerts pressure on the piston in the grinder pockets passes through throttle valves (one for each pocket); so that if, for any reason, the piston is held back, the pressure on it increases, while if it advances too rapidly the pressure decreases. The device can be combined with the power regulator or may be independent of it. Several forms of execution of the device are described. -A.P.-C.

F.-Soda and Sulphate Manufacturing and Equipment

F-3; F-5. Some Factors Influencing the Yield and Strength of Pulp Cooked by the Soda Process. MARTIN L. GRIFFIN, North Dighton, Mass. **Paper Trade J.**, lxxiv, No. 15, 211, 213, (April 13, 1922); **Paper Mill**, xlv, No. 14, 92, 94, (April 15, 1922); **Paper Ind.**, iv, 261-262, (May 1922); **Paper** xxx, No. 7, 57-58, (April 19, 1922). Reasoning by analogy from the finishing of cotton goods the author concludes that "a system which will prevent oxidation either by the use of a deoxidising solution or by a circulating system which will cover and submerge all parts of the mass alike and avoid as far as possible high temperature, will surely enlarge the yield and improve the quality of the product." He considers that "there is no system so effective as a positive pump so arranged that the liquor can be circulated in either direction." (Such a system has recently been patented by Escher, Wyss & Co. French Patent 533, 730, Dec. 19, 1921. A.P.-C.) -A.P.-C.

F-4 Recovery and its Control. G. K. SPENCE. **Paper Trade J.**, lxxiv, No. 15, 257-259, (April 13, 1922); **Paper Mill**, xlv, No. 14, 68, 70, (April 15, 1922) **Paper**, xxx, No. 7, 93-94, (April 19, 1922); **Paper Ind.**, iv, 527-529, (July 1921). The principle of recovering soda from spent liquor is theoretically perfect, but owing to leaks in different departments the best recoveery obtained at the present time is 91%, while in most mills it is much lower. The author describes a system by means of which recovery can be efficiently controlled and leakks can be quickly detected and stopped. -A.P.-C.

F-5 Method of Isolating and Extracting Cellulose or Paper Pulp from Fibrous Vegetable Materials, and Apparatus Therefor. Eng. Patent 171,482, WM. RAITT, Aug. 16, 1920. The fractional digestion process described previously (English Patents 15,779, 1912, and 16,488 of 1915) is modified in that the material remains in the same digester throughout the process. The plant consists preferably of three or four digesters, diffusers for washing the boiled pulp, and storage tanks for the digestion liquors. The digesters are fitted with perforated screens at the top and bottom, and discharge pipes are so arranged that the liquor can be drawn off from above the top of the screen or from the bottom of the digester. When the low pressure treatment is finished, as much as possible of the liquor is drawn off through the top discharge pipe (to remove scum which would otherwise be filtered off by the fiber), the remainder being blown out through the bottom pipe. Fresh soda is introduced and the digestion completed, after which the contents of the digester are blown into a diffuser, where the lignin liquor is separated and is conveyed either to a storage tank or a freshly charged digester, and the pulp is washed. -A.P.-C.

F-0 The De Vains Process for the Preparation and Bleaching of Paper Pulp by means of Chlorine. DE PERDIGUIER. **Chimie et Industrie,** vii, 238,243, (Feb. 1922). The process consists essentially in subjecting the cellulosic material to a mild alkaline treatment, chlorinating continously by means of chlorine hydrate ($Cl_2. H_2O$), dissolving the products of chlorination by treat with a weak soda solution, and finally bleaching in the usual manner with bleaching powder or alkali hypochlorite. The process as applied to the treatment of straw is described. It is contrasted with the process of treating cellulosic materials with chlorine gas (See **Manufacture of Paper Pulp by Means of Chlorine,** UMBERTO POMILIO, this journal xx, 375, May 4, 1922). Owing to the dilution of the chlorine and the presence of a large volume of water the action of chlorination is moderated and the heat of the reaction does not raise the temperature of the mixture more than about 1°C., so that there is practically no destruction or weakening of the cellulose. The preliminary alkaline treatment is important, as its omission would necessitate a stronger chlorination which would tend to hydrolyze the cellulose. -A.P.-C.

F-O Continuous Soda Process for the Preparation of Paper Pulp from Vegetable Materials. RAYMOND FOURNIER. **Papier,** xxv, 67-74, 109-118, (Feb., March, 1922). The author reviews the general constitution and composition of plants, the action of various reagents on plant contituents, the composition and qualities required of paper pulps, and the usual soda process, showing its disadvantages. He then describes a new process in which the material is subjected to mechanical action when it is still in the liquor; and after the latter has acted for some time and as soon as the fibers have been isolated from one another they are removed from the liquor so as to prevent deterioration by prolonged action of the liquor. The raw material is fed from a hopper into a cylindrical shell (preferably horizontal), closed at one end, and having a screw to make the material travel from one end to the other. The shell is filled with hot liquor. The apparatus is adjusted so that the material is discharged after the liquor has acted sufficiently long (about 15 to 45 minutes) and passes into a cylindrical box which is closed at both extremities by means of perforated plates between which revolve blades having either sharp or dull edges according to the results required. The number of perforated plates and of blades and the diameter and shape of the perforations vary according to the nature of the material being treated. On leaving the apparatus, the excess of liquor is removed and returned to the cycle, any losses being made up with fresh liquor; and the pulp is washed and is then ready for use as half-stuff. Many advantages are claimed for this process, which is covered by French Patent 523,871. (See this journal, xx, 462, June 1, 1922.) -A.P.-C.

K.-Paper Manufacturing and Equipment

K-6 Rag Shredders. A. LAMBRETTE. **Papeterie,** xliv, 105-106, (Feb. 10, 1922). In the Albert shredder the lower feed roll is 80 mm. in diameter and the upper about 50 mm. and is pressed down by means of weights. Both the rolls are grooved. The drum turns upwards on the side next to the feed rolls, so that the rags wind themselves around the upper feed roll to a thickness of about 5 mm.; and the teeth of the drum tear off the material as it winds around the feed roll. -A.P.-C.

K-7 Heating of the Stock in the Beater. F. VENNEMAN. **Mon Papeterie Belge,** ii, No. 1, 3,5,7, (Jan. 1922). The author gives a brief mathematical discussion of the subject, showing that the final temperature reached by the stock depends on (1) the total amount of stock in the engine, and (2) the amount of stock per second passing under the roll, i. e., the speed of circulation. He deduces the relation $T = \frac{K. W. q'}{Q. q}$, in which **T** is the rise in temperature, **K** is a constant which is the same for all beaters, but which depends on the nature of the paper manufactured, **W** the amount of work converted into heat, **q** the amount of stock passing ander the roll per second, **q'** the amount of stock per second passing at any given point of the trough, and **Q** the mechanical equivalent of heat. He thus shows how it is that the heating in modern beaters with large rolls and high speed of circulation is greater than it was in older beaters. He ascribes to this increased heating of the stock the difficulty experienced in some mills in obtaining proper sizing after modernizing their equipment. -A.P.-C.

K-7 Hydrating Machinery for the Paper Mill. GEORGE L. BIDWELL. **Paper Trade J.,** lxxiv, No. 15 191,193, (April 13, 1922); **Paper Mill,** xlv, No. 14, 54, (April 15, 1922); **Paper,** xxx, No 7, 53-56,(April 19, 1922); **Paper Ind** iv, 78-80, (April 1922). The hydration of the fiber in the beater is controlled by the consistency of the furnish and by the condition of the bars in the roll and bed plate. It is therefore of the greatest importance that the bars be kept in good condition. The use manganese steel is very efficient for the purpose, and its merits are dwelt upon. Much higher speeds can be used than heretofore, with practically no wearing of the cutting edge of the bars, due to the toughness of the steel. As high speeds cause the wooden fillers to work loose, the author has devised a beater roll, and also homogeneous liners and plugs for Claflins and jordans, in which the bars are cast integral with segments of the roll, etc., which are then riveted together. (This is covered by the following patents— U. S. A. 1,362,219; Canadian 215,567; French 531,530. A.P.-C.)—A.P.-C.

K-9 The Use of Mineral Fillers in Paper. E. ARNOULD. **Papier,** xxv, 59-62, (Feb. 1922 A general discussion of the function of mineral fillers in paper, and of the method of determining the actual amount retained in the finished paper. -A.P.-C.

K-10 Note on Rosin Sizing of Paper. Papier, xxv, 134-135, (March 1922). Sufficient sulphuric acid should be added to decompose the calcium carbonate of the water in the beater. After adding the size, more sulphuric acid (very dilute) is added so as to partially decompose the rosin soap. Finally, alum is added to acid reaction. It is claimed that this process gives just as good results as the use of alum alone for the decomposition of the size, and it is very flexible as the relative proportions of sulphuric acid and alum can be altered to suit the nature of the stock and the quality and grade of paper. -A.P.-C.

K-14 The Heating of Calender Rolls. Papeterie, xliv, 112, 114, (Feb. 10, 1922). The steam inlet and oulet are frequently at the same end of the roll. When the diameter is small relatively to the width of the machine, this results in uneven heating. This can be overcome by leading the inlet pipe to about the middle of the roll, or by attaching a pet cock to the opposite end of the roll to remove the air when starting up; but these should only be considered as remedies to an improperly designed roll and should not be adopted when designing a new roll. -A.P.-C.

UNITED STATES NOTES

The J. O. Ross Engineering Company, New York and Chicago, is installing in the Monarch Division of the Allied Paper Mills a new coated paper drying system. By improved methods hot air is substituted for steam, increasing the drying power from 15 to 25 per cent. and at the same time lowering the temperature in the drying room at least 40 degrees.

As the result of a devastating warehouse fire in the Greenwich Village section of New York City last Tuesday, several New York publishing concerns sustained heavy loss through the total destruction of stored newsprint. The conflagration, which is attributed to a chemical explosion, gutted the storage warehouse of the Manufacturers' Transit Company, in West Twelfth Street. It caused the loss of two firemen's lives and resulted in damage amounting to more than a million dollars. Chief losers of property in the fire besides the Transit Company were the Star Company, publishers of the New York American, which had nearly 500 tons of newsprint paper in the warehouse and the New York Tribune, which had 400 tons of paper in the place. These stores of paper were kept there as reserve stocks in case of interruption to freight shipments by the railroad strike.

L. S. Sterritt, of Lockport N. Y., who has held executive positions in Lockport and several mid-Western paper mill centers, has been engaged as general manager by the Eddy Paper Company, Three Rivers and White Pigeon. He succeeds A. B. Thomas, resigned.

Officers of the Eddy Paper Company have announced a plan of refinancing whereby it is proposed to organize a holding company which would absorb stock of present holders, both common and preferred, realigning it in an equitable manner in accordance with the suggested plan. Banks holding collateral would extend the time of payment, and unsecured creditors would be paid in full by taking 7 per cent. cumulative preferred stock in the holding company to the amount of their respective claims. The authorized issue of preferred stock in the holding company is not to exceed total amount of unsecured debts of the Eddy Paper Company.

A new company, to be known as the Adirondack Mineral Products Company, is being organized by Charles R. Outterson. It is capitalized at $50,000 and will be headed by Mr. Outterson, who until recently was chemical engineer of the Carthage Sulphite Pulp and Paper Company.

The National Paper Box Manufacturers' Association is calling upon its associate members to assist in a drive to stimulate the demand for paper boxes. Announcements have been sent out from the secretary's offices in Philadelphia reading: "An increase in demand for paper boxes will of course improve your business. Associate members can help stimulate this demand by requesting their employees to demand a paper box with every purchase." It is suggested that pay envelopes of employees contain enclosures on three successive pay days which are in the form of preparation and which point out the value of the paper box to the industry of the paper box supply trade.

Harry Burkhardt, of Holyoke, Mass., who has been Western New England representative of the Louis Shepherd Company of Boston, has been appointed superintendent of the Kalamazoo Stationery Company, Kalamazoo, Mich.

Charles M. Drummond, R. B. Buzzell, Wadleigh B. Drummond, G. M. Horne and George T. Spear, all of Portland, Me., have organized the Star Straw Cellulose Products Company to deal in paper pulp, pulpwood and by-products. The company is capitalized at $1,030,000.

Hans Lagerloef, head of the Lagerloef Trading Company, New York City, sailed for Finland last week on his annual business tour. He will visit Finnish mills for which his company is the sole representative in the United States.

Charles E. Nelson, president of the MacSimbar Paper Company, Otsego, has been named chairman of the Board Division of the Bureau of Standards. He has for years been active in the deliberations of this body.

STANDARDIZING PAPER TERMS

Washington, D. C., July 21,-The work already under way, and plans under consideration for the standardization of paper was described at a two day conference at Washington between Dr. S. W. Stratton, director of the Bureau of Standards and F. A. Curtis chief of the Paper Section of the Bureau, and the Advisory Committee from the paper industry for the Paper Section of the Bureau of Standards

The conference outlined some of the great problems faced in any effort to formulate standards of weights, sizes, colors and the like, and it was evident that the work already done, important though it has been, is only the first step in a long and highly technical program.

Some definite accomplishments resulted, however, through the conference between the bureau officials and the representative manufacturers, not the least being the decision to name sub-committees of nanufacturers to consider questions relative to standardization in the various grades. Members of these committees would be men who were particularly conversant with special branches of the industry.

The committee expressed hearty support of the work already done by the Bureau and of the studies on the program for the coming year, and this appreciation formally voted during the conference was later expressed to Secretary Hoover by M. Nevius as Chairman of the committee. In the call on Secretary Hoover, the committee expressed its interest in all the work being attempted by the Department for the paper industry, that of the Paper Division of the Bureau of Foreign and Domestic Commerce, as well as of the Bureau of Standards.

Approximately ninety square miles of timber on Skidegate Inlet, Queen Charlotte Islands, have been purchased by the Pacific Mills Limited of Vancouver from the North American Timber Holding Company for a price of $1,500,000. The timber will be logged and rafted to the paper plant at Ocean Falls.

The paper company have awarded the contract for the construction of a great diversion dam near Ocean Falls that will cost about $500,000.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, July 25. — Business in the paper trade is a little better, so far as local conditions are concerned. There is, however, the old complaint that consumers will not buy in large quantities, but order amounts merely sufficient for immediate needs. This in turn is reflected in the policy of the jobbers, who hesitate to stock up to any extent.

While the pulp and paper industry is in a fairly good position, it is, in common with other sections of commerce, menaced by the coal and railway troubles in the States and the threat of railway complications in Canada. The railway situation is of particular interest to the newsprint department, in that the great bulk of the production is for American account. Some of the mills are so situated as to be able to ship by water, but this method of transportation does not solve the whole problem, as considerable blocks of paper are for interior points. It would be unfortunate if Canadian mills should be compelled to curtail their output by reason of railway disputes.

There is no change in newsprint. The mills continue to work at top speed. We desire to again emphasize the point that it is the policy of the Canadian companies to maintain the present price for this year. The advance of $5 per ton by the International Company is more an indication of the strength of the market than anything else, although it has been made the basis of all kinds of conjectures by people who are more interested in sales of stock than in maintaining maximum volume of paper production and sales. The price-policy for 1923 will depend upon many considerations and conditions. The future will take care of itself. It may be pertinent to point out that mills are making considerable inroads on their pulpwood purchased at high figures, and will have the benefit of wood which will be obtained at lower prices. Some mills indeed have this year added to their wood piles at prices which are very low, and which will enable them to average the cost of their stocks. In connection with pulpwood, the American and Canadian mills purchasing supplies will receive some benefit under the recent railway reductions which are effective on August 1st. The reduction is 7½ per cent. making the rates on lumber and forest products in Eastern Canada 17½ p.c. higher and in Western Canada, 12½ per cent. higher than the rates which were in effect immediately prior to the last general increase of September 13, 1920.

Some very substantial orders for esparto papers of British manufacture have been recently placed by Canadian firms. The prices are stated to be so low that our mills will find it difficult to compete. The papers comprise printings, writings, and blue duplex. In this connection we may refer to the fact that a company, British Esparto Papers, Limited, Montreal, has been incorporated with a capital of $10,000 "to manufacture and market all kinds of pulp and paper products." Having regard to the smallness of the capital, the company is clearly a selling organization.

It is a good sign that boards are picking up. This section has for a long time been subjected to very keen competition from the other side, but it is now coming into its own. Most other lines are experiencing a moderate demand.

The revival in pulp continues, but while the buying is better, there is no movement in prices to speak about. Bleached sulphite is commanding a ready sale, while groundwood is more active.

The trade figures for June again indicate the high position that the pulp and paper industry holds in our export business. Forest products increased from $13,279,906 in June 1921. to $20,022,455 in June this year. With the renewed activity in newsprint, we may look forward to further gains during the remainder of 1922.

Toronto Topics

Fuel clouds begin to darken a horizon that was rosy with promise of steady improvement, and there is apprehension that coal production has fallen so far behind that central Canada will suffer a decided fuel shortage this Fall.

New Hydro electric development will not take care of this fuel shortage as the plants are not in many cases so equipped that any large transfer from steam to electric power can take place, and much of the new power is contracted for in new installations.

In spite, however, of this condition and the slackening normal at this time of the year, general business, both wholesale and retail is decidedly better than at same period of last year.

Buying of merchandizing accessories such as containers and decorative material for Winter and Christmas indicates the generally confident feeling of good business conditions following harvest.

Some manufacturers of staple cotton goods have bookings for next May in notably larger volume than for last Spring. The legal procedure which culminates the deals between the Hydro Commission, Toronto, and the McKenzie-Mann interest, known as the "Clean up" deal seems to be on the verge of settlement and will enable various projects for extension and betterment of local transportation to be pressed with vigor and this lessen unemployment and stimulate trade.

Market Notes

Pulps remain at same price levels.

Groundwood, $30.00 to $40.00 delivered.

Sulphite. News grade around $60.00 delivered. Book grade around $65.00 delivered. Bleached around $85.00 to $90.00.

Sulphate; $70.00, delivered.

Book. Shows moderate activity with prices steady.

Writing. Fair demand for this season.

Coated Papers. Mills report increasing inquiries and look for improved conditions.

Wrappings and Tissues. Are fairly active with prices unchanged. No. 1 Kraft M.F. $8.00 M. G. $8.15. Colored Sulphite $8.00; Colored Kraft 9¾c. to 10¾c.; B. Manila $5.50; No. 1 Manila $6.75; Fibre Manila $6.75.

Bags.—Light Manila 62 p.c., 7½ p.c. off 100 M lots. Heavy Manila 60 p.c., 7½ p.c. off 100 M lots; Light Kraft, 60 p.c., 7½ p.c. off 100 M lots; Heavy Kraft 50 p.c., 10 p.c. off 100 M lots; White Confect. 17½ p.c., 10 p.c. off 100 M lots.

Tissues—No. 1 Manila 20 x 30, 80c. 24 x 36, 1.05 Natural White, 20 x 30, 90c. 24 x 36, $1.25. No. 1 White 20 x 30, $1.10; 24 x 36, $1.55; No. 1 Manila Sulphite, 20 x 30, $1.00; 24 x 36, $1.40.

Towels—Car lots.

Interfolding per case, 5.63 net; Bleached White, rolls of 150 towels, (50 rolls to case), $22.00 less 22 per cent. Natural rolls of 150 towels $19.00, less 22 per cent. No. of 150 towels, (50 rolls to case), $22.00 less 22 per cent.

Toilets—Car lots. List Price less 20 p.c. and 25 p.c.

Paper Stock.—Some export activity due to higher prices across the line. Canadian mills still buying rag stocks in quantity with prices firm.

No. 1 Hard White Shavings		$3.75
No. 1 Soft White Shavings		3.45
Heavy Books and Magazines		1.70
Ledgers and Writings		1.95
No. 1 Kraft		2.25
Newspapers		.80
No. 1 Mixed Papers		.60
No. 1 Miscellaneous		.55
No. 2 Miscellaneous		.60
Cotton Rags No. 1 White (lb.)		.04½
Thirds and Blues (repacked)		.02
Roofing Fags (ton)		23.00
New Cotton Cuttings.		
Fancy Shirt Cuttings	5¼	5½
No. 1 White Shirt Cuttings	10½	11
Canton Flannels Bleached	7½	8
White Lawns	7½	
Blue Overall Cuttings	5½	
Ropes and Bagging.		
No. 1 Scrap Bagging	18.00	
No. 1 Manila Rope	5½	5¾
Mixed Strings	15.00	

NEW YORK MARKETS

New York, July 22. — (Special Correspondence). — Activity in the paper industry continues at an unusually lively rate for this season of the year. Demand for most kinds of paper shows little or no abatement, and manufacturers and jobbers are kept fairly busy filling the wants of customers, while the tone of the market is steady to firm with quotations in a majority of cases showing an upward tendency. Indications are numerous that this summer will prove to be one of the most active that the industry has enjoyed in some years. Thus far the customary slowing down of demand has affected only certain kinds of paper, and even these are wanted in relatively larger volume than is ordinarily the case in midsummer. The basic descriptions of paper are holding up in demand in a very gratifying manner and give promise of becoming livelier as the season advances.

It is necessary, of course, for paper manufacturers to close down their plants for a time during July in order to make repairs to machinery; if they do not do this their production suffers during the remainder of the year. Most mills in the States therefore are making repairs to their equipment as usual, yet it is significant that they are remaining down only for as short a time as is absolutely necessary. Paper mills as a general thing have such a volume of orders on their books at present that they cannot afford to halt production for any longer period than is imperative; moreover, most manufacturers are endeavoring to accumulate sizable stocks of their product in anticipation of a much heavier demand for paper later in the year. Reports from the Middle West concerning mill operations in that section are highly encouraging. It appears that paper manufacturers in that part of the country are busier, individually and collectively, than are those situated in the East. The reason for better industrial conditions in the West than in the East is difficult to explain though nearly everyone in the trade acknowledges that business is on a broader scale out West than in this part of the States. The reason may be in part a psychological one. It is well known that business in the West is conducted on a broader scale by men who take a wider and more progressive view of business situations than do those in the East, where greater conservatism is practised, and the probabilities are that in such times as exist at present, the former policy is creative of bigger business and is serving to keep industrial plants operating on a larger scale than those located in the East.

At any rate, members of the trade who have just returned from trips through the West report paper mills in that part of the country quite active — relatively more so than are those in the East. Further, it is stated that better prices are being secured in the West for most kinds of paper than prevail in the East, which would indicate that less competition exists in the former district notwithstanding that mills are getting a greater volume of business. After all, competition decreases as orders increase because there is not the eagerness to land business, and this may explain the situation existing in the West.

As an example of the active position of the newsprint industry, it is reported that the International Paper Company on last Tuesday produced for the first time this year more newsprint than the rated capacity of the company's mills. Normal capacity of the company's plants calls for 1,300 tons of newsprint and half of that amount of other kinds of paper. The I. P. has for several months been steadily increasing its production of print paper, owing, of course, to the growing demand for this paper from publishers, and its output has gradually advanced until it is now said to be close to maximum. Gossip in the trade has it that the I. P. will announce another jump in newsprint prices on new contracts of $5 a ton, bringing the price up to $80. How much truth there is in the rumors no one can say, but many in the trade give them due credence, and are of the opinion that market conditions fully warrant another advance.

The market for box boards continues active and appears to be constantly broadening. Box manufacturers are absorbing board in good tonnage, mainly, of course, against immediate requirements because not much board can be carried in stock, though in a great many instances consumers are storing as much board as they have room for in anticipation of increased requirements during the next two or three months. Prices on boards are firm and inclining upward. Mills near New York are quoting $37.50 f.o.b. this city as a minimum on plain chip board and $40 on filled news board, and many quotations are substantially above these levels.

Writing papers are moving in a steady way and at maintained prices. There is also a slow but gradual improvement in book paper demand, and quotations named by manufacturers are beginning to show the influence of the increasing consuming call for paper of this kind. Cover papers are moving well, and there is a fairly good demand, considering the season, for tissue and wrapping papers. Building papers are in brisk demand, and mills making all descriptions of roofing and building paper are keeping very busy.

GROUND WOOD — Consumption of ground wood is reported fairly heavy, thus holding up demand at a larger rate than is customary at this time of the year. Newsprint mills are absorbing mechanical pulp freely, and there is a steady call for supplies from board manufacturers and other consumers, and prices show little or no fluctuation, demand being ample to sustain market values and available stocks of ground wood being large enough to prevent prices from advancing. Around $30 to $31 a ton at grinding plants is the basis generally quoted by domestic producers, with quotations varying, depending on the amount of pulp involved and the freight rates from producing to consuming centres.

CHEMICAL PULP. — Probably the feature of the chemical wood pulp market this week has been the easier position of imported kraft pulp. It is reported that paper manufacturers have been successful in buying foreign kraft pulp down to $45 a ton, or 2.25 cents per pound, ex dock at New York and other American Atlantic ports, and it is said that some large transactions have been engineered at around this price. In fact, reports have been received of the sale of what is said to be the largest lot of foreign kraft pulp, said to approximate 4,000 tons, ever figuring in a single transaction in the history of the pulp trade, to a mill in the Middle West. Prices on domestic kraft are reported to have been but slightly affected by the lower quotations on imported kraft, with the leading producer in Canada and the foremost manufacturers in the States quoting from 2.75 to 3 cents a pound f.o.b. mills, depending on the quality of the pulp concerned.

Sulphite continues to move in good tonnage and at fairly steady prices. Bleached sulphite in particular is wanted by paper mills and is holding up in value. News grade sulphite is moving freely also, and easy bleaching finds a more or less ready sale.

RAGS.—Demand for the low grades of papermaking rags used by roofing felt mills features the market at present. Roofing paper manufacturers are absorbing supplies in large amounts and in a consistent manner, and the movement of this class of stock has the usual effect of sustaining prices on the better qualities. Sales of No. 1 roofing rags are reported at 1.25 cents a pound f.o.b. New York, and probably this price has been exceeded in some cases, while No. 2 classification packing of roofing stock is readily bringing 1.10 to 1.15 cents per pound at dealers' shipping points. Old whites are quotably steady and are selling in moderate amounts for the summer season, and old thirds and blues are firm at about 2 cents per pound for repacked grades and 1.40 to 1.50 cents a pound for miscellaneous packing. New cuttings are firm in price and most grades are favored with a comparatively good demand. No. 1 white shirt cuttings are now held by dealers at around 11.25 cents a pound at shipping points, unbleached muslins at 9.75 cents, white lawns at 9.50 cents, fancy shirt cuttings at 6 cents, and washables at 3.75 to 4 cents.

PAPER STOCK.—As in rags, low grades of old paper are meeting with a relatively better demand than the high qualities. Board mills have been active buyers of No. 1 mixed paper this week at about 55 cents a hundred pounds f.o.b. New York, and folded newspapers are selling at 65 to 70 cents, No. 1 container manilas at 80 cents, and overissue newspapers at 95 cents. Soft white shavings have been in fair call and buyers have been enabled to secure supplies at slightly lower prices, around 3.50 cents a pound New York being the average market level, with some sales reported down to 3.40 cents. Hard shavings are rather neglected yet dealers firmly quote close to 4 cents a pound for No. 1 packing. Old books and magazines are steady at 1.75 to 1.80 cents per pound for No. 1 heavy books, and 1.35 to 1.40 cents for mixed books. Kraft paper is bringing 1.85 cents a pound f.o.b. New York, and white news cuttings 1.80 cents.

OLD ROPE AND BAGGING.—Prices on old Manila rope are firm; if anything, they are on slightly higher levels. Dealers with rare exceptions ask at least 6 cents a pound at shipping points for No. 1 rope, and sales have been reported in some directions at a quarter of a cent

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

per pound higher. Demand for old bagging shows a little improvement, with sales noted of No. 1 scrap bagging at 1.10 cents a pound at dealers' points, roofing bagging at 80 cents a hundred pounds, and domestic gunny bagging at 90 to 95 cents.

SUGGESTIONS FOR CANADIAN EXPORTERS

Canadian Trade Commissioner Frederick Hudd

New York City, May 5, 1922.—In a report which appeared in the *Commercial Intelligence Journal* of March 18 (No. 946), the writer endeavoured to indicate the importance of New York as a centre through which Canadian firms might develop export trade with foreign markets. Supplementary to this report, and after further contact with many New York export houses, the writer feels that Canadian exporters would welcome a summary of the opinions or complaints expressed by these houses in speaking of their dealings with Canadian firms.

The principal difficulty would appear to be the delay experienced in receiving replies to inquiries. This is the most frequent complaint made. One extreme case was cited where an exporter sought quotations from three Canadian firms, but did not receive replies until eleven, sixteen, and nineteen days after the despatch of the inquiry. In some cases, firms communicated with are not in a position to export, but even in these circumstances it is desirable inquiries should be acknowledged with as little delay as possible. Prompt attention to inquiries tends to build up a basis of confidence and goodwill. This is very important, particularly in view of the fact that some exporters are always looking for permanent sources of supply.

Another complaint met with which deserves some comment is that the descriptive literature prepared by some Canadian manufacturers is not sufficiently detailed for the purposes of giving full information to an interested importer. Such literature meets domestic requirements, but literature for export purposes should be of a character that would answer any questions which might arise in the mind of the prospective buyer. This difficulty could be remedied to a great extent by more attention being paid to descriptive literature. Delay entailed in making explanations by correspondence often results in loss of business.

As a result of contact with the New York export houses the writer offers the following suggestions to Canadian firms interested in export trade:—

(*a*) Give immediate attention to all enquiries.

(*b*) Prepare special literature describing in detail the goods available for export.

(*c*) When asked to quote do not request a specification where there is a recognized basic price for the line in question.

(*d*) If practicable, establish personal contact with export houses—preferably through a resident representative.

(*e*) Do not be disinclined to deal with commission or agents, provided they have a good standing.

(*f*) Always quote c.i.f. port or destination or f.a.s. port of shipment when goods are for export by sea. —Commercial Intelligence Bulletin.

WALL PAPER MARKET CONDITIONS IN BRAZIL

Major E. L. McColl, Canadian Trade Commissioner in Rio de Janeiro, writes under date April 4, 1922, to the Department Trade and Commerce that the wall paper industry is one of the many which has been developed during and after tahe war. All the cheap grades are now manufactured locally and are protected by a heavy duty. The better grades of European and American embossed and imitation leather papers are of course still imported. Importation of wall paper for 1913 amounted to 87,457 kilogrammes, and came principally from Great Britain (45,312) and Germany (27,053). For the years 1919 and 1920 and first six months of 1921, this amount had fallen to 51,604, 14,156, and 8,567 kg. respectively. The present importation consists almost entirely of the higher grade papers. The Brazilian market for the cheap foreign product must be considered a declining one.

WHY HE SELLS

I was lunching recently at the Boston Yatch Club with a business man who, single-handed, sells 90 per cent. of his company's product, says Thomas Dreier, in the Lombard News Letter.

"Why is it that your partner does not sell more?" I asked.

"Jim isn't a salesman," he said, "although he thinks he is. He does know how to handle finances, so we get along splendidly, even when he pretends he knows how to sell."

"But doesn't he know how to sell?"

"No, he doesn't know enough about human nature. He can handle money or materials. But when it come to handling men, he fails.

"If you were to tell him about a dog you saw chasing its tail in a peculiar way, he would come back at you with a story about two dogs he saw. He would discount your story by telling a bigger one.

"And what would you do if I told you a story about that dog?"

My companion laughed. "Why," he answered, "I'd tell you how sorry I was that I wasn't there to see that dog with you."

Scandinavian American Trading Co.

50 E. 42nd STREET
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CHEMICAL — MECHANICAL

WOOD PULP

FOREIGN — DOMESTIC

**COMPACT
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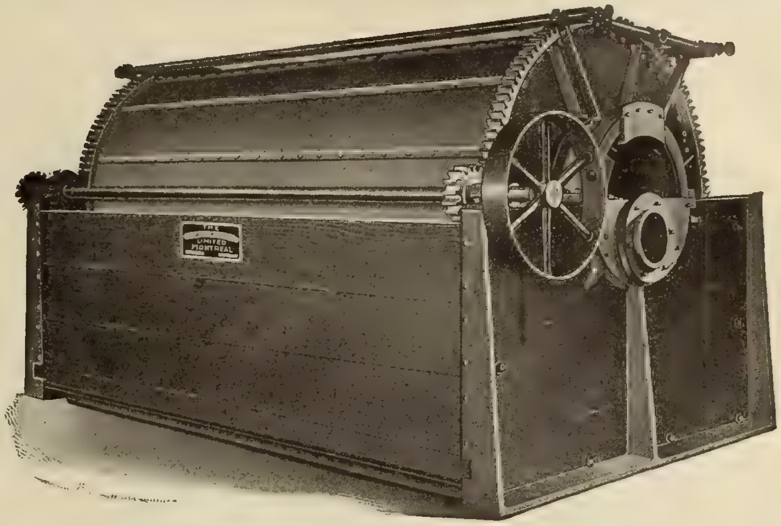

THE "NORTH" WASTE DETECTOR OR

SAVE-ALL

HYMAC

**Large capacity, only one horse power.
No up-keep costs. Ask for bulletin "K."**

Price and delivery will interest you.

THE HYDRAULIC MACHINERY CO., LIMITED

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**SIMPLE
IN
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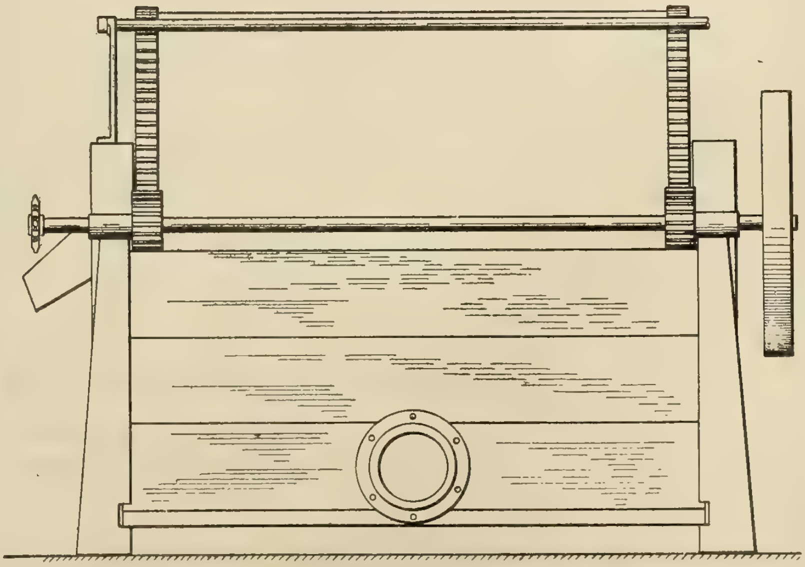
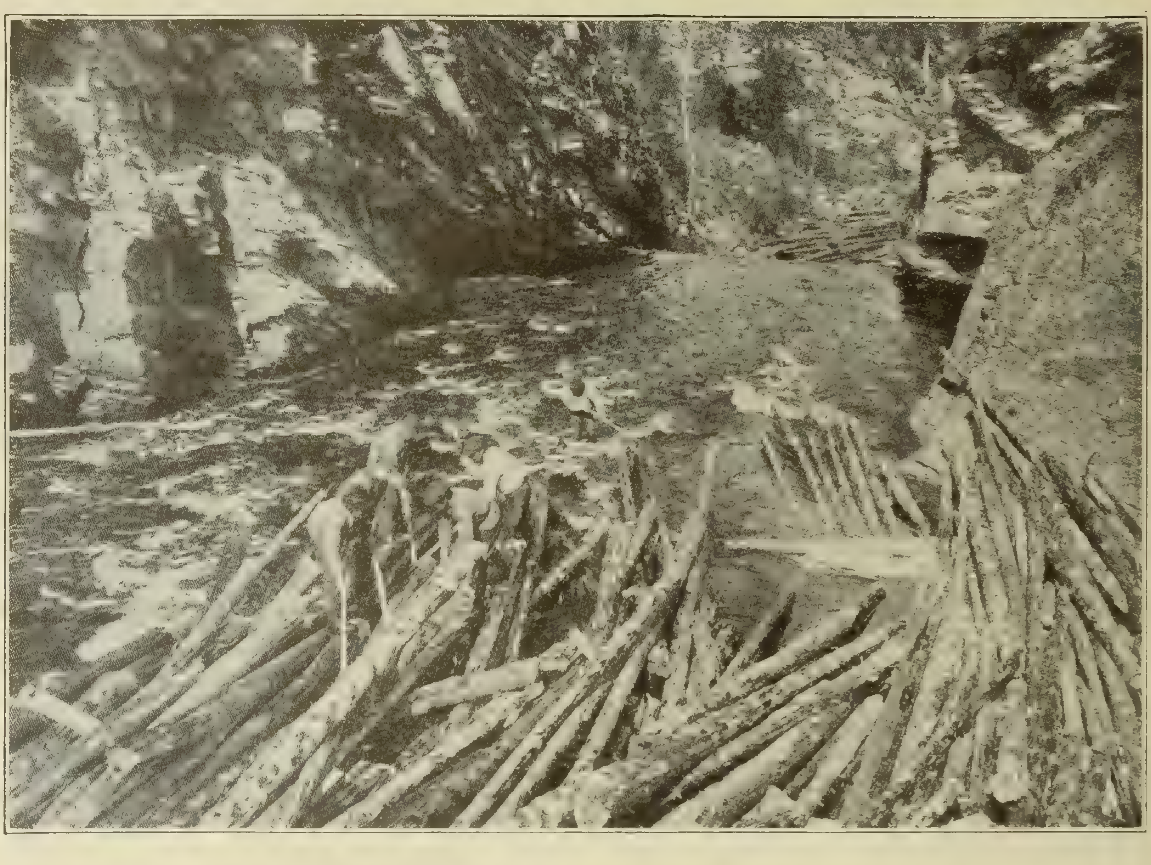




The Best Way to Bark Wood is by Drum and There is a Best Drum

OUR drum design accomplishes wet barking, a most important—and exclusive—feature.

The slotted construction permits the free escape of bark as removed.

Barking capacity of our drum is not approached by any other type of drum of similar size.

The flexibility of chain suspension—hot rolled U-bars of such shape as gives tremendous strength and permits a solid job of riveting to channel rings—a surface of perfect tumbling efficiency which still cannot bruise the wood—these are more than talking points.

Speaking ot durability, our drums have in numerous instances been operated continuously for six years—not months—without an hour's loss of time by breakdown. The specifications of our drums are interesting, but their field records are conclusive.

CANADIAN BARKING DRUM CO., LTD.,
Royal Bank Building
TORONTO, CANADA

These reports from users of the "Bird" Save-All tell a consistent story of low operating, cost long life and large capacity for power expended

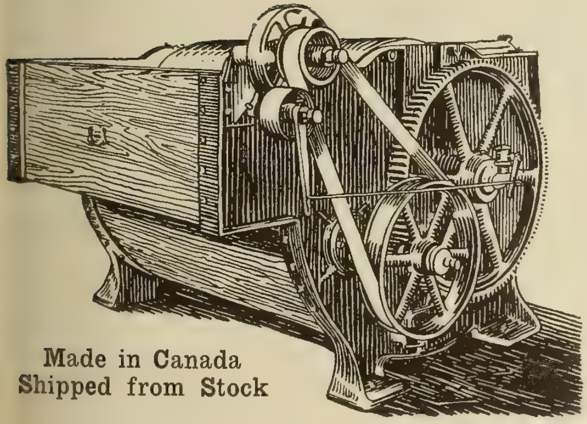
"We have a "Bird" Save-All on a six cylinder machine. The other day I found considerable pulp deposited on the cylinder of the Save-All. I asked the machine tender where the leak was. He said everything was tight and there was no leak. We began to investigate further, however, and finally found one of the brass valves at the bottom of one vat cocked up slightly so that the pulp was escaping. Without the Save-All that might have gone on for days. This is only one instance of waste. Sometimes the cylinder packing leaks; sometimes it is the vat and sometimes it may be in the mixing box. The "Bird" Save-All, as a leak detector is a wonder.

"We wish to take this opportunity of expressing to you the satisfaction that we have received from the one ''Bird'' Save-All which has been in operation in our mill since last fall. In fact, our satisfaction in this was such that we have already received the second machine in order that all of our waste water be passed through a Save-All before being discharged into the sewer."

''We have one of your ''Bird'' Save-Alls in operation. It has proved highly satisfactory, and we believe it is the very best machine of its kind on the market. It requires almost no power to operate, and the speed adjustment is such that the wear on the machine is reduced to a minimum."

"We have the "Bird" Save-All in operation, and it is doing the work for which it is intended very satisfactorily. We have placed an order for an aditional Save-All to take care of the white water on our No. 3 machine.''

"The machines are giving very good satisfaction. One of them has been in operation for one year and has had practically no repairs. The wire on this machine ran ten months. The two main advantages that we get from the use of the machines are the amount of stock that we reclaim from waste water and the fact that the machine acts as a telltale which enables us to detect any leakage which may occur on the paper machines."



Made in Canada
Shipped from Stock

To those who are interested in learning more about the possibilities of reducing operating costs by eliminating waste, we will gladly send bulletins and list of users. Address our nearest branch.

CANADIAN INGERSOLL-RAND CO., LTD.

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"BIRD" SAVE-ALLS

Provide a method of eliminating waste that is open to all and are often as essential to economy as good management.

EVERYTHING
IN
STEEL PLATE

For The Pulp and Paper Industry

ELEVATED WATER TANKS
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EIGHTH
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Machinery
Products

Every industry needs raw materials; each industry requires machinery of the latest type: — the utmost from the development of man's mechanical mind: — and all to produce the finished product.

The spirit of progress is change and advancement. The spirit of fashion is change. If dyes are to be the fashion as the fad requires there must be progress and change!

This Exposition offers the opportunity for display and visualizing the changing fashions in dyes and the progress of the American chemical industry. Dyers have the opportunity of selection and discussing with experts the chemistry of the respective colors displayed. Thus they can secure the best of what is made for this purpose.

Progress is the keynote for the Exposition in its displays of the raw materials, machinery and products, and no branch of the producing or consuming dye industry can fail to find much of vital importance to their own use.

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CANADIAN MM C

Wood Room Machinery

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Lombard Crushers

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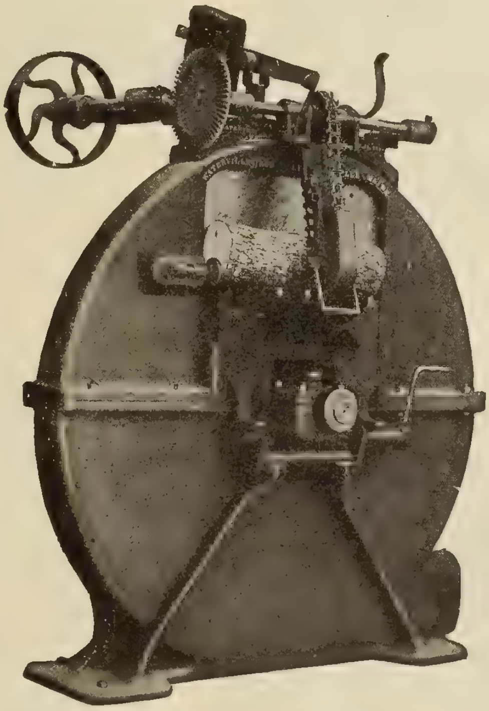

60-in. Lombard Barker with Barker Attachment

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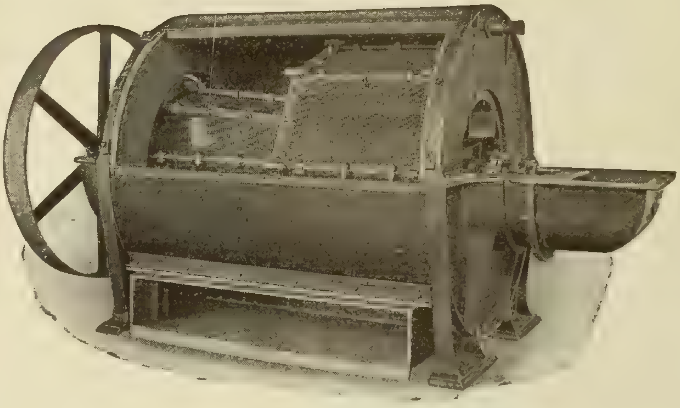
Insure your Output

By Installing Modern Machinery

Knotters, Knot Screens or Sliver Screens



For sulphite, sulphate, soda, kraft or ground wood. Capacity up to 50 tons, less than 1 H.P. per machine, single belt drive, no gears or sprockets, no packings, slow speed, quick detachable plates. The standard machine for removing knots, shives and foreign matter.

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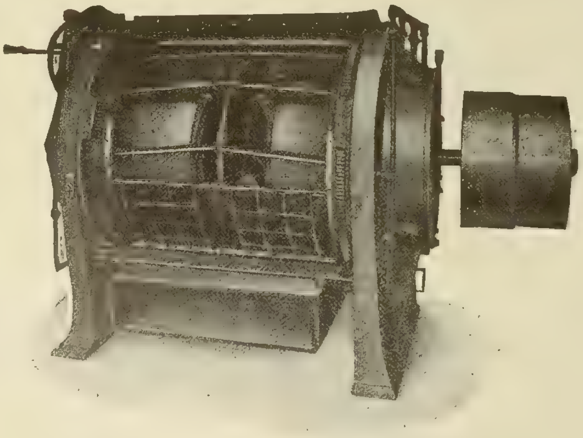

For screening sulphite, sulphate, soda, kraft or ground wood. Highest quality of stock produced at minimum power, revolving screen plates, mechanically correct.

Our other Machines have proved their own value

Your Investigation Warranted

SHERBROOKE MACHINERY CO. Limited,

SHERBROOKE - QUEBEC

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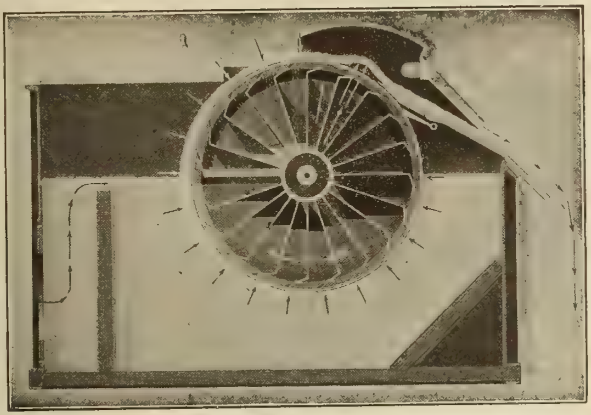

Diagram illustrating Cross Section of Pneumatic Save-All, showing direction of Air Pressures and Formation of Film of Fibres

Money SAVED pays dividends. Our Save-All is earning a million dollars a year for its users by saving waste fibre. We are on the trail of the other millions which are still flowing away each year in waste water.

CORRESPONDENCE A PLEASURE

Some Known Facts and a Few New Ones

(1) Everyone interested in the paper business knows that there is more or less waste from beginning to end of the entire process.

(2) He knows that in every industry in the world financial success rests, in a very great degree, upon preventing waste, in finding and stopping up, one by one, every possible source of loss.

(3) He knows that great progress has been made, in his own business, by instituting wise economies—real economies—in management, in production, in the marketing of his product.

(4) And yet he knows that until recently very little progress has been made in preventing the enormous but hidden losses through waste water that is rich in fibre.

(5) He knows all about the schemes that have been exploited and the costs incurred in trying to save this waste, and that as a rule this waste still goes on because the measures tried have not proved capable of preventing it.

(6) Nevertheless, a way exists to save waste fibre successfully. The engraving gives an idea of this way, and we request only the opportunity to tell every mill owner and superintendent all about it.

(7) The reason of our success in this line is that we have found the one natural method of catching and holding the fibre as it flows away in the white water, and have applied this method in our Pneumatic Save-All.

(8) In the engraving our Pneumatic Save-All is shown in cross section. Inside the cylinder mould we produce a very slight vacuum, by a blower. The waste water is lightly sucked through the screen and drains away while the fibres are trapped and held upon the outside. They cannot rub off; they cannot slip through, for they are pressed flat upon the screen by air pressure. (See the inwardly pointing arrow heads.) At the top of the circle each section of the cylinder in turn comes under the direct action of the pressure side of the blower, and the film of pulp is lifted off (see the outwardly pointing arrows) onto a deflector. One save-all and blower take only 5 H.P.; and the same blower, with very little extra power, will serve two save-alls.

We have installed hundreds of them in mills where old methods had proved useless, and where we have had to prove both the existence of heavy losses and the power of our Save-All to prevent them.

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Largest Plant of the kind in the Dominion, ranking amongst the most modern FELT FACTORIES in the World.

Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

The success and reputation of "Ayers Felts" bears evidence of the Quality and Dependability built into them. Construction features evolved for all kinds of machines, for all classes of paper, to give maximum efficiency with regard to the particular manufacturing problems in the various mills.

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WASHED
WITHOUT
SHUTTING DOWN
PAPER MACHINES"

The Patented "Ayers" FELT WASHER attains this ideal for which paper makers have long been striving. By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.

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Already in operation in some of the largest Paper Mills where it is recognized as indispensable and a great money saver.

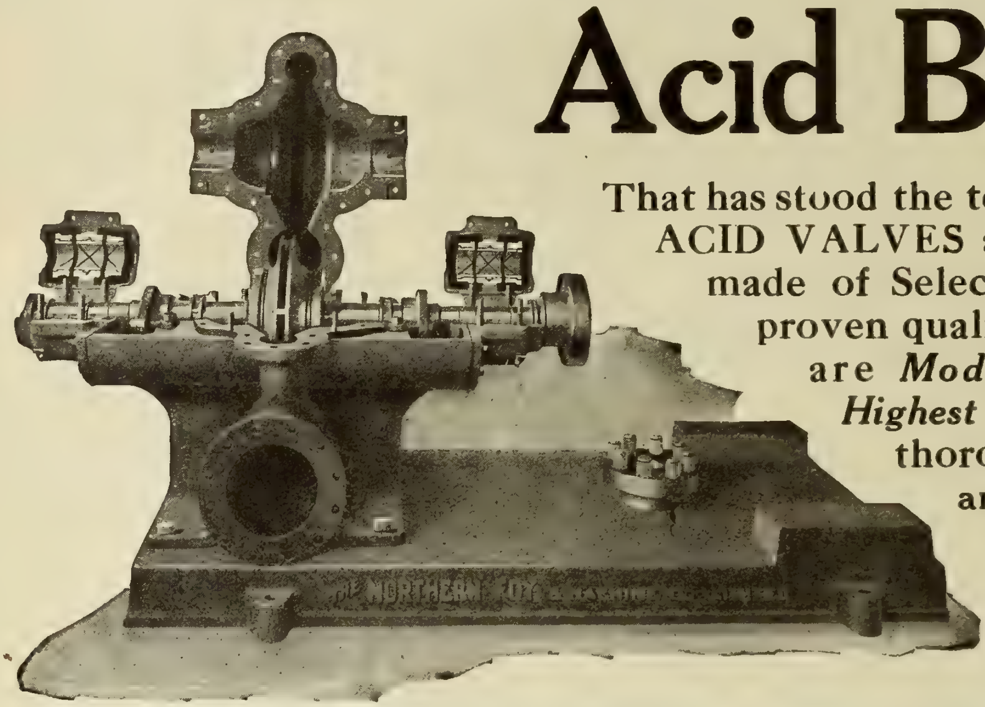
Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

Full particulars given upon application.

A special Felt has been designed for use in conjunction with this Felt Washer wherever it is in operation.

These two essential factors — "AYERS FELTS and FELT WASHER" — in perfect team work — make for efficiency, economy and genuine satisfaction in the Paper Mill.

Acid Bronze



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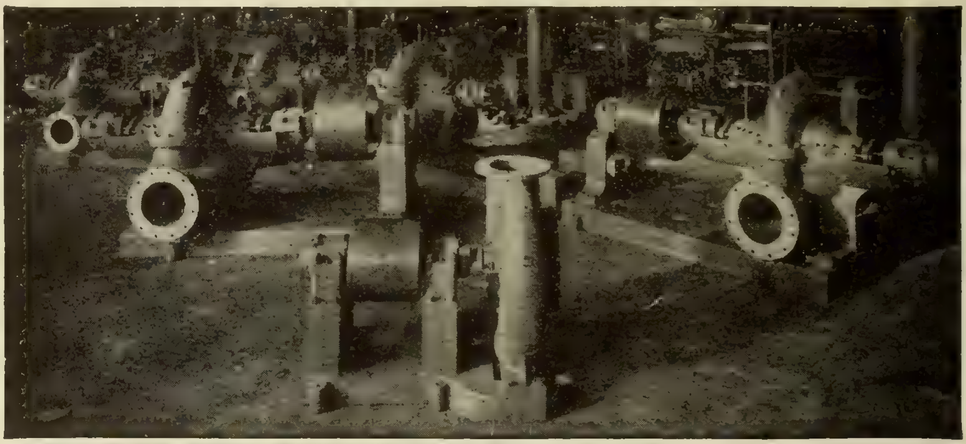

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The Kenwood One Side Board Felt Combination

enables the paper maker to produce a smoother sheet. Speaking of paper made on this combination, one mill says:

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Kenwood One-Sided Felts give longer service because they are stronger—give better finish because they are smoother—give greater speed bcause they are more open.

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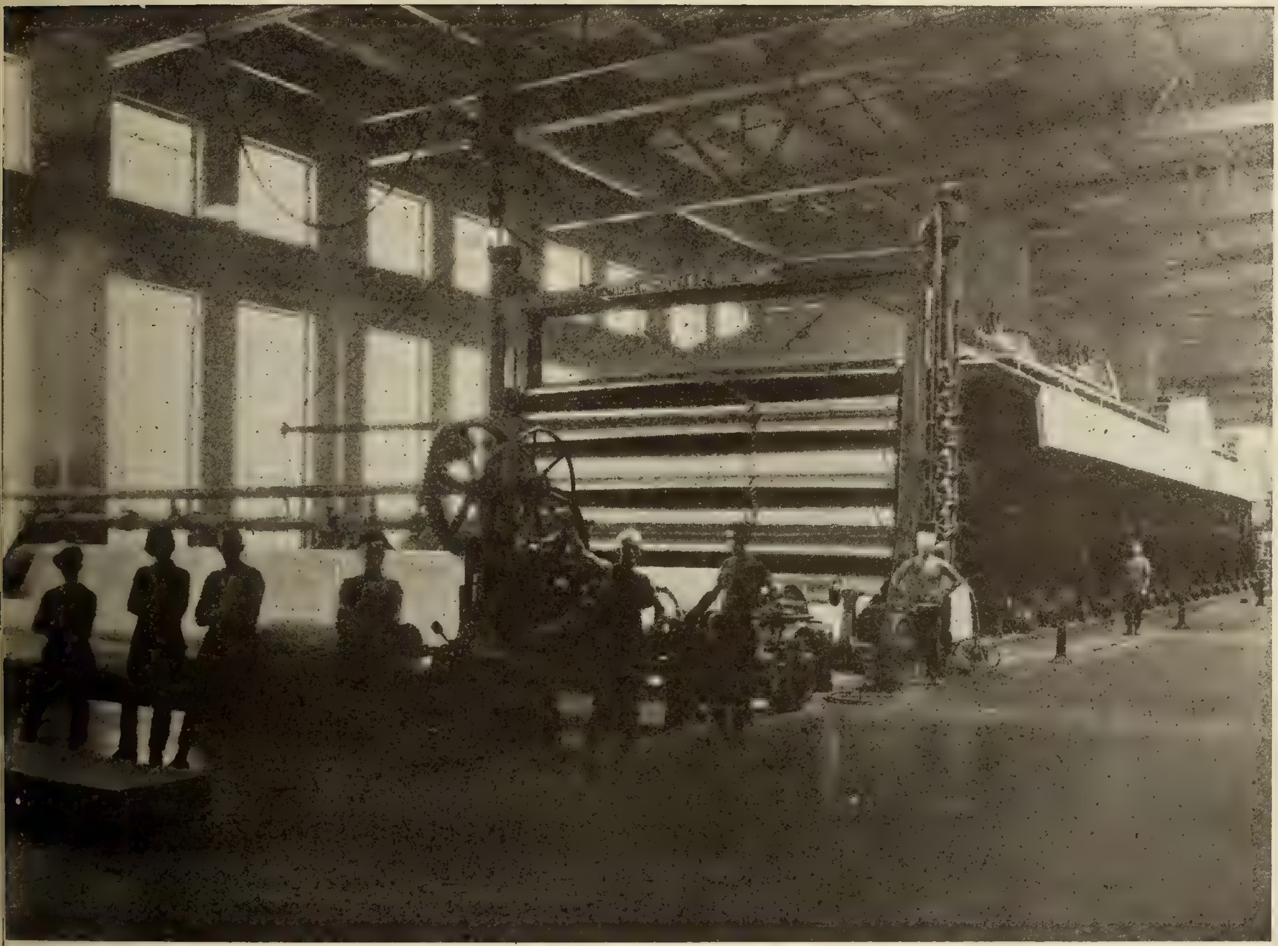

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ON the roofs of busy mills and factories, a roofing meets the severest service-test of all. There it must not only resist sun, frost, rain and snow, but the added hazards of live steam and acid vapors, of hot smoke and flying cinders.

It is under such service conditions that Everlastic "Rubber" Roofing has proved its supreme durability and economy.

Today to the experienced factory superintendent the Everlastic name on "Rubber" Roofing means maximum service at minimum cost.

Everlastic "Rubber" Roofing is sold in three weights, light, medium and heavy—108 square feet to the roll, nails and cement with each roll.

Plastic Elastigum Patching Cement

For stopping leaks in roofs, for re-lining gutters, stuffing cornices, for repairing flashings, etc., nothing can equal Plastic Elastigum. It is known as the "waterproof cement of a thousand uses." It adheres to either wet or dry surfaces. Comes ready for use.

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The most economical and durable paint for both metal and wood penstocks. Used extensively by Canada's biggest paper mills. Gives a smooth, glossy black finish that resists the action of weather, acids, and alkalies. We make paints for all industrial uses.

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THE difference between inexperience and experience is the difference between intention and fulfillment.

THE fact that a seller's intentions are good, is poor compensation if his organization is bad. Sentiment is a poor substitute for efficiency.

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Everybody realizes the comfort of a soft, clean towel in these warm days. Comfort, sanitation and convenience are what you receive when you use an INTERLAKE INDIVIDUAL Towel.

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Put up in packages of 150 towels each, and cases containing 25 packages. Metal dispensing cabinets, free of mechanical parts, can be obtained with either olive green or white enamel finish.

A new profit for jobbers and an unusually good towel for users. Ask for samples and prices.

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Sole manufacturers of the celebrated

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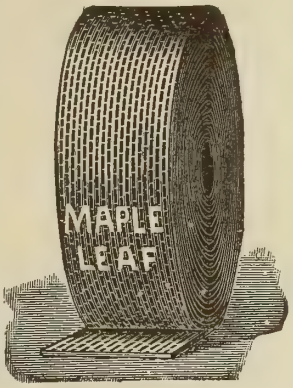
Brand Stitched Cotton Duck Belting



Which is strong, durable, economical and true running.

Being thoroughly waterproof it is equally good for running in wet or dry places, and specially adapted for use in Pulp and Paper Mills.

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Alphabetically Arranged. Printed in Clear Type.

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Paper, Pulp and Board Mills—Names and Addresses of more than 5,000 in 40 different Countries, with (1) Makes of Paper; (2) Number and Width of Machines; (3) Tonnage Output; (4) Power Used; (5) Telegraphic Addresses; (6) Agents, etc. Mill Productions classified in One List, alphabetically arranged according to Goods and Country. Special Buyers' Guide. Paper Agents and Mill Representatives (with Mills Represented.)

Paper Stainers, Enamelers and Surfaces of Paper. Wholesale Stationers and Paper Merchants. Waste Paper Merchants, Rag Merchants and Paper Stock Dealers. Export Merchant Shippers of Paper. Card-board and Paper Box Manufacturers. China Clay Merchants. Paper Bag Makers.

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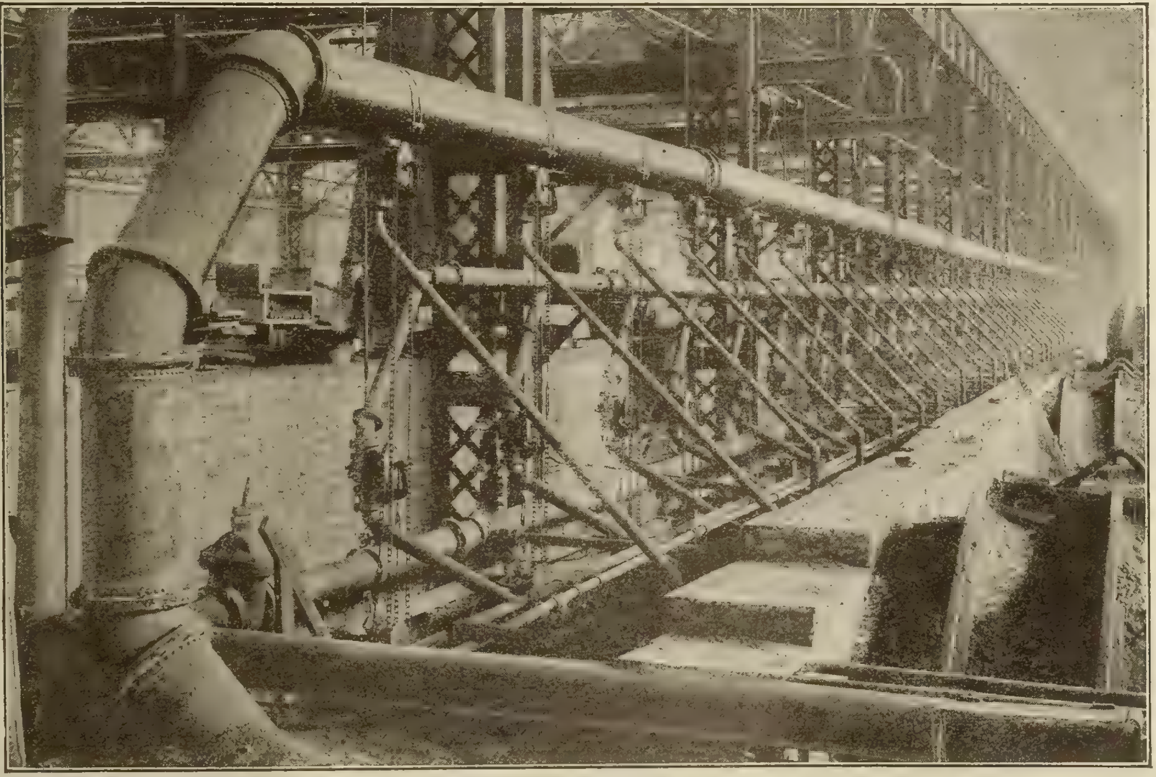

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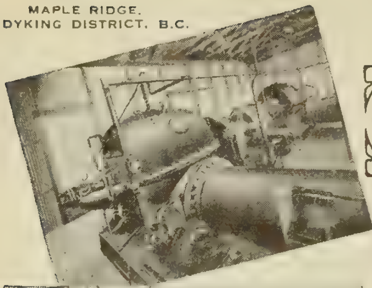
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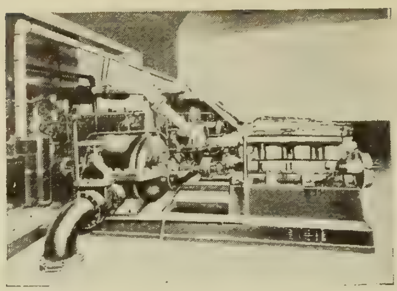
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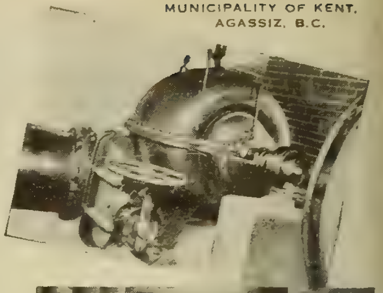
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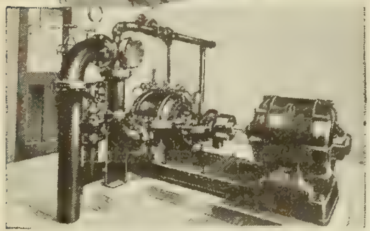
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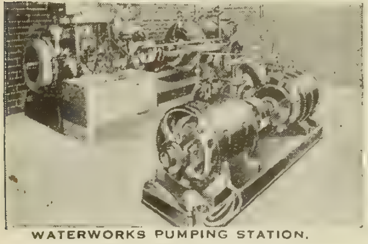
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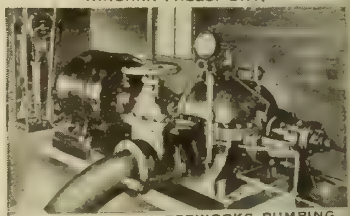
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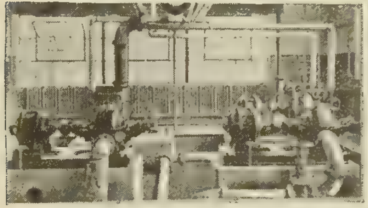
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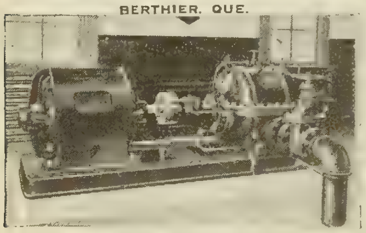
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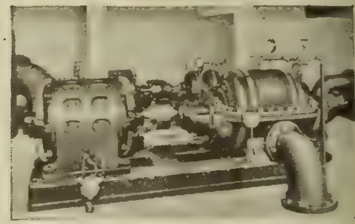
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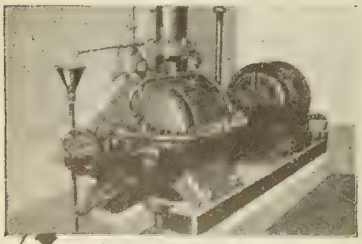
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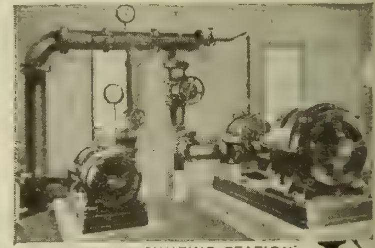
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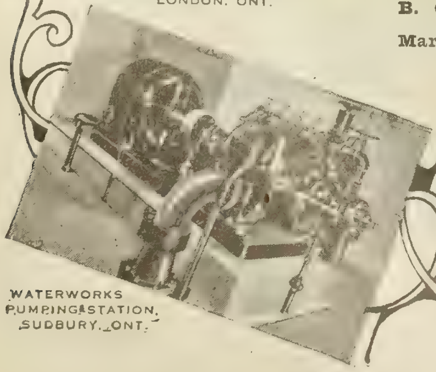
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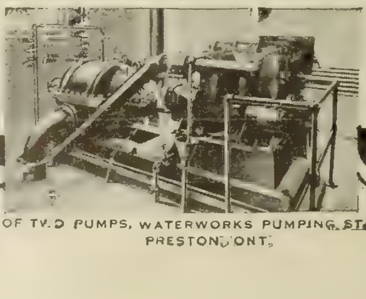
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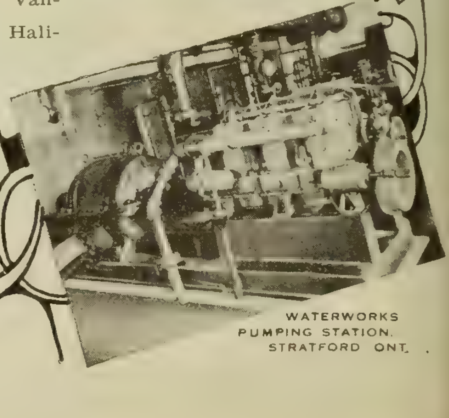
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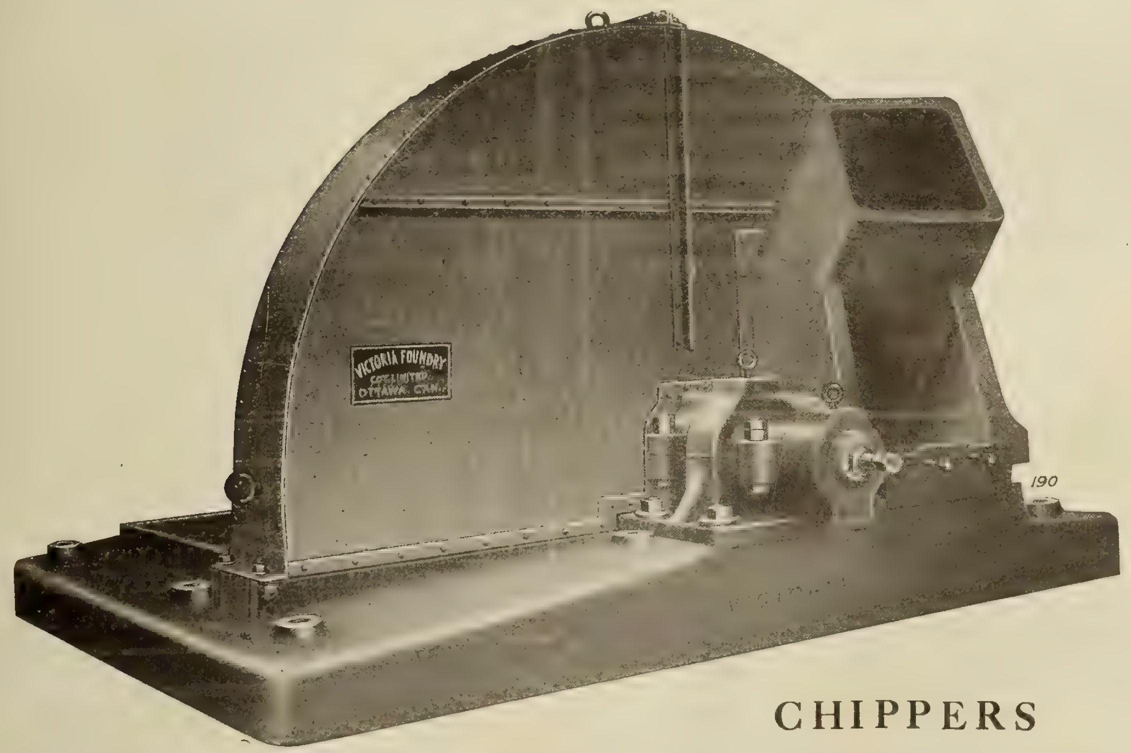

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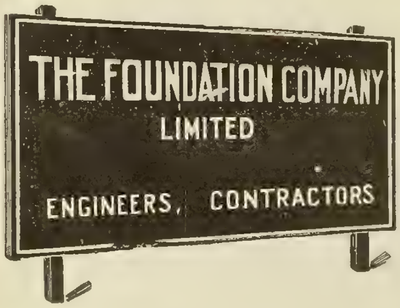

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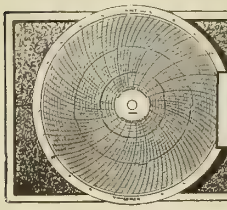

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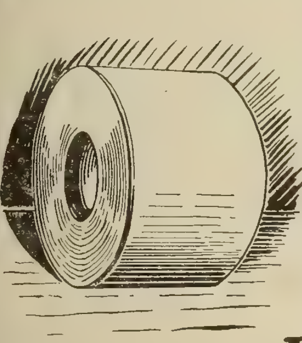

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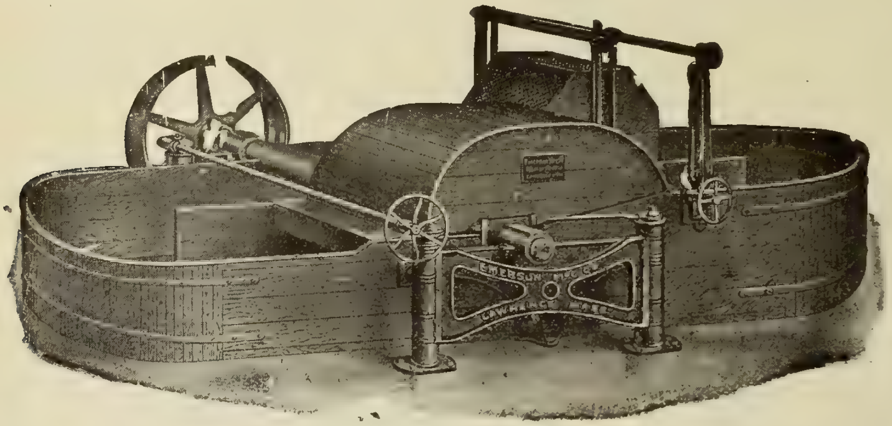
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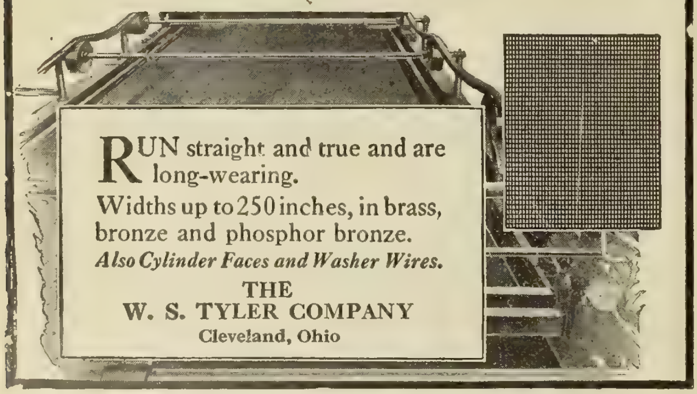

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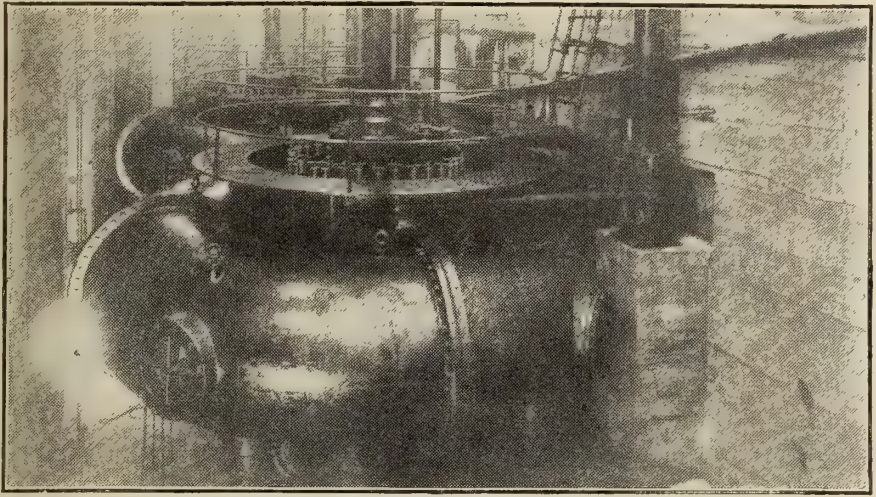

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EDITORIAL

HOME-MADE COAL

The present situation with regard to coal supply brings up very forcibly the desirability of being less dependent on the United States and England for an adequate supply of fuel. Hydro-electric power, produced by the wonderful waterfalls and swift rivers with which Canada is blessed, can, if fully developed, supply all the driving force necessary to keep our industrial wheels turning. It will even go far toward running our railroad trains, but where heat or steam are required, fuel is necessary. We are aware, of course, of the successful use of the electric steam boiler and anticipate other developments of the application of electricity to problems of heating. The use of the electric steam boiler, however, appears to be limited at present to the consumption, for generating steam required for periods of low power load, of power which would otherwise be wasted, as, for example, heating the mill and providing the small amount of steam required over week ends and holidays.

On several occasions the *Pulp and Paper Magazine* has published articles on, and made editorial reference to the recovery of the carbonaceous matter removed from wood by the cooking liquor during the manufacture of chemical pulp. More than half the substance of wood is dissolved out in the isolation of the cellulose and practically all of it is combustible. Several processes have been developed whereby ethyl alcohol is first produced by fermentation of the sugars in the waste liquor, after which the non-fermentable matter is dried to a point where it will burn freely. From the results of actual operation in Scandinavian mills using one process and semi-commercial trial of another process in a mill in the United States it seems rather astonishing that there has not been more interest taken in this proposition.

The economic recovery of waste is a source of profit and it would seem to us to be good business on the part of pulp and paper mills to invest in apparatus for the comple utilization of their raw material before making plant extensions for the further consumption—and waste—of an already diminishing supply of pulp wood and the attendant consumption of additional quantities of coal for the conversion of wood into pulp and paper. It is surely poor business to throw away material that can be made into a useful product and it should be worth while so to convert it if the ultimate result were no better than an even break on total cost and final value. But we have pretty good evidence that there is a fair margin of profit in the production of fuel from sulphite waste liquor, to say nothing of the relief from anxiety as to supplies of coal. A mill thus recovering fuel would be relieved of great expense in storing from six months' to a year's supply of coal and the worry of keeping it from taking fire. A small coal pile would doubtless be carried for emergencies, but as long as pulp were produced, fuel would be available, and in quantities that would steam the digesters, dry the paper, and, if alcohol were made as a by-product, operate the still.

Such a fuel plant, working in conjunction with electric steam boilers for utilizing excess hydro-electric power for shut-down steam load would make the pulp mill practically self contained as regards raw material. Except for sulphur, not a dollar's worth need be imported, and even that can be had in Canada by using pyrites, of which large deposits are available.

Why not make the maximum profit from the minimum consumption of wood?

COBWEBS

There is a nice neighborly touch in Mr. Dodge's letter to the *Editor and Publisher* when he refers to competition with "paper from European countries in which the wages paid are from one-third to one-half those paid in American mills." Canadian and United States wage scales are practically identical. Mr. Dodge protests the unfair reference to the necessary increase of $5 per ton on spot paper. He goes on to say, "The action of United States publishers controlling legislators and office holders, is rapidly throttling the news industry of the United States. Many of the United States mills will be required to go out of business, one of these days the publishers will wake up to the fact that their policy is a short sighted one, and when the United States mills are taken out of the field as competitors, they will pay the foreigners for their paper prices which today seem impossible."

STUNG!

The publishers of the *Pulp and Paper Magazine* cashed a check for H. A. Bouffard. We lose!

ACKNOWLEDGEMENT

Dean & Son, London, have favored us with a copy of their 1922 Paper Makers' Directory of All Nations. Every paper mill, pulp mill, sales agency, and supply house should have a copy of it. The price, 21s. nett, is very reasonable. It is the most complete directory we know.

Contemporary Comment

Pick Your Apprentices

(The American Pressman)

A short time ago there were many in the printing industry who seemed to be much concerned over the apprenticeship question. An officer of the U. T. A. summed up the "failure" to provide a sufficient number of apprentices by stating that "the industry is committing industrial suicide."

Perhaps it looked that way to some people during the abnormal years of the war, but one would hardly say so today. No one we know of just now is feeling the discouragement of a shortage of labor, in their pressroom at least. If so, then this suffering can surely be relieved.

This goes to prove that the main trouble with the industry is not because of lack of apprentices nor a scarcity of workers. The main trouble is, and has been, a lack of careful selection of apprentices. As long as there is no systematic selection of those to whom we are to teach the printing trades, just so long will there be inferior journeymen. The cost of training misfits is tremendous, and most of this necessity can be avoided by attracting better timber.

The responsibility for furnishing competent, reliable workmen has been generally placed at the door of labor unions. The most progressive unions have accepted this responsibility to a great extent and have made honest efforts to carry out these obligations. Various methods have been employed by the unions; some have been very careful to give those who were already members an opportunity to gain knowldge and skill through technical training. Some unions have done both and, furthermore, have set a standard for all those who seek membership, in many cases making it necessary for all apprentices to take some kind of training before they were given journeymen cards.

The cost to the industry of developing real craftsmen sufficient to meet the need will, however, be exorbitant unless more care is given the matter of selecting only those apprentices who have the ability and inclination to advance by conscientious work and study. In this the employer and management has the greatest responsibility.—The American Pressman.

Pulp and Paper Markets

(Finnish Paper and Timber Trades Journal)

The supply of orders for Finnish paper has hitherto been fairly satisfactory, which appears from the published figures for paper export during January-April. Some machines are taken up till the end of the year, others at least till the end of May or the beginning of June. Until now, however, all the incoming orders, the conditions of which as to size and time of delivery were suitable, could be accepted by the mills.

If the supply of orders is satisfactory the prices are still just as unsatisfactory as before. The American market is somewhat brisker, making a raising of prices possible, but in England the market is very slack and such is the case on the continent. Holland is flooded with German paper at prices steadily going down and in France, perhaps under pressure on the part of the banks, the Swedes have thrown out great quantities of newsprint at astonishingly low prices. The final conclusion can be said to be that the prices are so pressed down at present that many factories in Finland, especially those that cannot cut their pulpwood in their own forests now go without profit.

The cellulose market still bears the stamp of the stock sales of the Scandinavian mills. A collaboration between sellers for the sake of preventing a panicky dropping of prices, much discussed some time ago, could not be realized for many reasons; so competition on the market has become more violent than ever during the last weeks. The violent drop in prices, however, works to create a reaction. The buyers understand very well that there is no possibility of producing goods at the present prices, least of all in Scandinavia; they know that a rise in prices is impending as soon as the Swedish and Norwegian mills have sold out their old stocks. This moment is not far off, for the cellulose lately sold is very quickly consumed. The sales contracted also are of a character greatly to strengthen the position of the Scandinavian millowners towards their banks.

As to the supply of orders the Finnish mills have not hitherto had the same reason of complaint as on the question of prices. They are practically sold out till the end of July and had have to refuse many orders for prompt delivery.

The situation of the pulp market is on the whole unchanged. The rise in the value of the Finnish mark during the last few weeks has rendered business more difficult and abroad prices have again gone down under the pressure of the Scandinavian sales. Only France has shown some interest in concluding business, especially in moist pulp.

In cardboards there is an evident improvement during the last weeks. The mills possess orders for at least two months ahead and prices are stable.

Business Better in Britain

Very few paper and print firms have yet reached the period of real profits, but there is a much better return for the first half of this year than for the preceding period. Stocks are not depreciating much, and business is better. There are many mills working full time, and now that postal rates are reasonable and printers' prices down, paper should be brought into use on an ever-expanding field of utility. Already, the printers claim that the volume of orders is increasing; and to judge from the mass of advertising literature which comes along with every mail, there seems every reason to believe that paper consumers are letting themselves go a little. So that, although it may take time to get back once more to normal trade, normal figures, and normal profits, at least we seem to be going in the right direction.

(World's Paper Trade Review)

TIMBER LIMIT HOLDERS AT QUEBEC

Quebec, July 27.—A delegation of timber limit holders of this province waited on Premier Taschereau and Hon. Honore Mercier, Minister of Lands and Forests, today to discuss certain matters of interest to the lumber business. The first was that favoring the building of dams to help the driving of logs, and the second had regard to the timber cutting duties. The tariff, which was adopted last year, has now expired and a new one has to be made. The suggestions were to the effect that different tariffs might be made for different sections of the province, but generally the tariff of last year seemed to be acceptable. At a request of the Premier the delegation will neturn next week and wait on the full Cabinet.

Our English cousins do not agree with a statement from an American source that paper manufacturers in the States have suffered more severely than in Britain during the past year.

The Seven-Phased Standardization of Paper

By R. E. Rindfusz Ph. D. Sec. American Writing
Paper Co., Holyoke, Mass.

The following is one of the most concise statements of the advantages of standardization in paper that has appeared. It was prepared by Dr. Rindfusz, at the request of the National Association of Purchasing Agents, and was read at the Annual Convention of that organization in Rochester, N. Y., May 16 *to* 19. *Inasmuch as standardization is a particularly vital theme at the present time, the paper trade cannot fail to be interested in reading this explicit statement of the essential phases of standardization.*

The economies and benefits of standardization as applied to qualities of goods and processes of manufacture have been so thoroughly demonstrated within the past few Iyears as to be entirely outside the argumentative field. The danger now is that the term is becoming a mere meaningless expression, falling lightly from the lips of the glib-tongued salesman without any comprehension as to its real significance or any knowledge as to whether or not it may honestly be applied to the goods he is discussing.

We have seen the same vitality-robbing evolution manifested with the terms "efficiency," "scientific," and "research," until the mere use of them is becoming meaningless. Such an evolution is common and always to be fought against. The great revivals of morals and religion throughout history have been largely a rewakening of people to the vital significance of terms they were using lightly and without meaning. "The letter killeth, but the spirit maketh alive."

It is therefore my purpose in this short paper to attempt to outline as I see it, and as the company I represent practises it, the vital significance of the term "standardization." I feel safe in assuming that you purchasing agents, whether you buy directly from the paper manufacturer or not, act on the principle that you must know the ultimate source of your supply, and that the business and manufacturing methods of your supplier, even though removed by a middleman, are decidedly your business. This attitude was given great impetus during the recent war, especially by Brig. General McRoberts, head of the War Purchasing Department, who, when he considered buying of middlemen, always sent officers to investigate the manufacturers back of the people he bought of.

Standardization in the paper industry—to embrace its complete substance and vitality—has a seven fold application. These are the standardization of (a) raw materials; (b) process; (c) product; (d) line (grade standardization); (e) distribution; (f) price; and (g) uses. The entire time allowed for this paper could easily be exhausted in discussing any one of these, but I shall attempt rapidly to take them up in order, indicate their meaning, and particularly to touch upon the advantages through each.

First: Raw Materials

Obviously the raw materials going into a product must be of standard and uniform quality, if the processes of manufacturing and the nature of the product are to remain unchanged. Sometimes it costs a little more to hold rigidly to definite standards of raw materials, but the economies far offset this. No one can appreciate better than you purchasing agents the waste of inefficient buying, the small turnover, the immense idle stocks, the tied up storage space, insurance and investment costs and the deterioration of idle stocks that come when you attempt to buy for requirements that are varying. Under the old method of manufacture, we never knew for any time ahead what was to be made in a particular mill. Therefore, we could not prepare adequately. The amount of money we carried in inventory was largely beyond our control, and spot buying for emergency needs that arose over night due to the arrival of an order was the rule rather than the exception.

Second: Processes

A standard product made in long runs from standard materials allows for the standardization of each step in the process of manufacture. This means the finding out through engineering and plant experience the one best and most economical method of doing each thing and making that "standard practice." It also means the opportunity to have the best equipment for each thing and that equipment completely "balanced" for making the particular product it is turning out.

Since we have inaugurated standardization in our mills, we have released immense amounts of equipment that otherwise were kept for occasional uses. We have been able to move these into other mills where they are finding constant use, and our overhead for idle equipment has been materially reduced.

It must be remembered that in any manufacturing process the various units through which the material has to pass will be in "balance" only within a very narrow range of variation in the product; any considerable change will mean that the same units will not be able to keep up with others and there will be "down" time. For instance, if the time of beating the stock is increased, and it varies from one to eighteen hours in actual mill practice, depending on the grade to be made, either we will have to employ extra beating equipment with its attendant power supply and expense, which would lie idle part of the time, or during the time of increased beating the big paper machine will lie idle waiting for stock. When you remember that a paper machine costs anywhere from $150,000 to $500,000, you can see what "down" time means.

Again, standardization allows for long and steady runs. Under the old system it was common practice for us to make changes in the kind, color, weight and size of the paper going over the machine several times a day. Each of these changes meant loss of production and wasted paper, since it takes some considerable time to get stock going over according to specifications. It meant even cleaning up the machine, the beaters, the stuff chest, the Jordan, the screen, changing felt, sometimes changing wires, and making complete re-adjustments. Picture for yourself the expense of such loss of actual running time on a million dollar equipment!

Again, in the short run the entire time of the machine crew is of necessity taken up in getting a product that will "get by." It is only in the long and continuous runs that they can give their attention to the niceties of manufacture which make a little better product, run a little greater speed, which insure for the consumer the desired uniformity and reduced costs and even for the manufacturer turns a small loss to a small profit.

It should be pointed out in this connection that the thing to remember is that each line or trade name of paper, speaking now particularly of bonds, involves on the average three weights, three sizes, and from three to five colors—many of them carry eight or ten colors—thus making a total of twenty-seven or more items to each line. It can readily be seen that there are very few private brands in existence which offer orders large enough to give the advantage of standard processes of manufacture. It should also be remembered that even such a small thing as changing a dandy roll and making two papers which are identical, except for the watermark, involves a considerable cost, since through all the processes following the machine, from the rough paper to the finished product, those two lots have to be kept separate.

Third: Product

It has already been indicated that the standardized manufacture of paper of fixed specifications in large runs allows for the maximum uniformity possible within the limits of manufacturing skill. The uniformity of the product and the knowledge that this is to be made and sold continuously allow the mill to run on a steady production schedule, building up stocks during periods of low demand and depleting them during periods of high demand. On the unstandardized basis, the only alternative is to follow the feast and famine method.

The definitely standardized paper is made to meet particular needs and built according to definite specifications, and is constantly tested to see that it is up to these specifications and that thorough uniformity is maintained. The ordinary paper buyer and paper user is not a paper expert. We could cut a cent per pound or more in quality-value out of our higher grade papers and the ordinary user would be none the wiser. However, if we did it there would exist the same incentive for taking out another cent. In fact, that is just what has been done in the past, with multiplicity of brands, both mill and private, though chiefly private. Papers have been built for the purpose of cutting into the trade of another on the basis of that cent which was taken out of its contents. Consequently, the general trend of qualities has been downward and, as a result, low grade papers are in use for which they are not fitted and the paper industry has hurt itself and its customers.

Under the chaos of paper qualities which still exist, you can buy safely only by one of three methods: (a) Become such a paper expert that you are willing to match your own knowledge and judgment against that of any manufacturer or dealer. (I may add that this involves the equipping and operating of a complete paper testing laboratory): (b) Employ such a laboratory or staff of experts to aid in your buying; or (c) buy standardized papers bearing the manufacturers' mark, guaranteed and made according to definite specifications, so that you may know the quality of these papers and the needs they are designed for.

Fourth: Standardization of Line

So far we have talked about the manufacture of a standardized product. However, no one paper or no small group of papers will meet all the paper needs, nor is it desirable to have such an excessive number of papers that the differences between them become small and meaningless and result in confusion. The ideal is to have just enough papers to meet all the real needs, no grades overlapping, and still no grades so far apart as to leave genuine intermediate needs unprovided for. Standardization of a line means just as much blocking up the holes to meet the real needs as it does eliminating the overlapping grades. There is no such thing as a universal paper, and a utility paper is only a makeshift. The real discerning users demand the right paper in each place

Fifth: Distribution

Since each business can expect ultimately a profit only as it serves, the real end of standardization is to effect economies and efficiencies for the consumer. The distribution of the goods, therefore, must be by a standardized, simple and direct method. The advantages gained by manufacturing economies and the effects of efficient business policies must be passed on without impairment, nor must the identity of the manufacturer and the knowledge of the way he conducts his business be lost to the consumer through an artificial blind wall built up by the distributor. The distributor has an important function for which he should realize a fair profit proportional to the manner in which he serves both his customers and the manufacturers for whom he distributes. He should not be allowed to pose falsely as a manufacturer. Moreover, the mutual knowledge and relationship between the actual producer and the final market of the goods, or consumer, are too vital, and their interests are too common, for any industry to prosper which establishes an artificial barrier between them.

Sixth: Standardization of Price

When values are fixed and known, when the buncombe is taken out of the product and it is made according to definite and open specifications for definite uses, the next step of standardization should be fixed and known price, uniform throughout, quality and terms considered. The great medium for haggle-buying is unidentified, unstandardized goods of unknown and varying quality, and in such buying the customer is invariably the loser. The unpriced, unvalued, bastard goods form the favorite medium for the commercial adventurer—the plunder-merchandizer, so-called by Mr. Mahin. All standard goods of fixed price and known origin are the logical medium for the service-giving merchandizer. The former involves no good will and plays only for the individual and immediate deal; the latter combines the good will of the manufacturer who stakes his all on his product together with the good will of the service-giving distributor, and builds for permanency in business relationships.

Seventh: Uses

It has been pointed out that line or grade standardization must be carried out so that the consumer may be properly served by the goods furnished him. It has also been pointed out that the manufacturer and the consumer must have free and intimate contact so that the knowledge of each may be used by the other; first, by the manufacturer in preparing the goods for the consumer, and lastly by the consumer in the use of the goods. This, we consider the final step in standardization; namely, interpreting the uses of the consumer in terms of the standardized line of goods and passing on to the consumer the information as to the uses for which each grade was prepared, so that the benefits of standardization of the line may be fully realized by the consumer. It profits the consumer nothing that we may have spent a great deal of time and money in preparing an article to meet his need unless he knows about that article and the uses for which it was made. This field is new in the paper industry, but already we have found the most glaring inefficiencies due to improper uses of grades and sizes of paper—absurdities, in fact, that seemed almost impossible, and we are devoting our energies most sincerely to the development of this genuine service.

In closing, let me emphasize again that the danger of standardization in the manufacture and distribution of goods is not that we shall over standardize, but that we shall lose the benefits and true significance of the fact by light talking and no doing.

Now this seven-fold application of standardization which we have briefly touched upon brings in its train great advantages and benefits to consumers of paper and printing, to distributors, and to manufacturers, many of which have been suggested. I might, in addition, if I felt warranted in taking your time, round out this paper by a consideration of these manifold results that follow from the seven-fold application. These results, however, are common to all well-organized industries of definite and standard products, with which you purchasing agents are familiar, and regarding which we could learn much from you. One of our reasons for being here is that we may profit by this association with you. I am very glad to say that my intercourse with you during the past few days has been of great benefit to me, and I am grateful to you individually and collectively for this great occasion.

BABSON TELLS EMPLOYERS TRADE UNIONS WILL SOON TAKE ON NEW STRENGTH

That trade unions are on the verge of a stronger and more vigorous growth than ever before in the history of the country is the conclusion of Roger Babson, statistician for Big Business. Recognizing this fact, Mr. Babson gives a word of advice to employers.

He states that government by injunction and the attempt to disrupt labor will both fail, and the inevitable result will be that the wage-earners will take a leaf from the employers' book, organize more tightly, and then probably will demand, and no doubt secure much more than if the employer uses common sense before it is too late.

Mr. Babson's article, published in his Bulletin, carries the picture of several clock faces to illustrate his points. The article is so interesting that it is reproduced in full, as follows:

"Employers the country over have been swinging the tomahawk for the past eighteen months. The days for such activity are now drawing to a close. It is time to think and reason. What we mean is indicated by the clock face which appears on this page. It is now about six o'clock industrial time.

"Eighteen months ago it was between 3 and 4 o' clock. For the past three industrial hours we have been going along in an industrial twilight when the advantage was all with the employer and not at all with the employee.

"During the war, with the approval of some of the best minds in the nation, the practice of collective bargaining was set up in hundreds of places where previously no such thing had prevailed. Of late, following the lead of United States Steel, many firms have gone back to the individual bargain plan — some with a cast iron individual contract which binds the employee never to join a union or any other labor organization — and a systematic campaign of 'union busting' has gone into effect.

"Again, a new form of industrial government has been set up — government by injunction! The twilight employer, rather than work his way through industrial difficulties, has gone around them and has rushed to the courts to accomplish by legal force what he could not bring about by other methods"

— The Paper Makers' Journal

FOURDRINIER WIRE TENSION

By JOHN KEPKE, Jr.

The running tension of a Fourdrinier wire in service, although of some importance in the operation of the machine, is largely gauged by trial and experience; and there is seldom any idea of the actual tension in pounds. If automatic wire tighteners were used analogous to the automatic felt tighteners in general use in dryer sections, a closer control of wire tension would be had and this tension would always be definitely known.

From available data it appears that the normal operating tension varies between 6 and 10 pounds per inch of width of wire, with a maximum probably well under 20 pounds. However, the tightening devices in common use leave the machine tender free to increase this at will, limited only by the strength of the wire; and in extreme cases very high tensions may be applied for short periods.

In calculating bearing loads on the various rolls in a Fourdrinier part the effective wire tension is of prime importance; and it must be assumed that occasionally the wire may be stretched to its elastic limit.

In order to determine the elastic limit and other physical properties of wire, samples were obtained through the kindness of wire manufacturers, and were tested in a tensile testing machine for elastic limit, ultimate breaking stress and elongation. Samples of approximately 60 mesh and of approximately 70 mesh were tested.

Short specimens 3 in. wide were first used. These gave breaking loads of 133 to 141 pounds per inch of width for 60 mesh wire, and from 113 to 125 pounds for 70 mesh, with elongation at rupture of about 20 per cent for 60 mesh, and an average of about 17 per cent for 70 mesh. However, it was found that the elastic limit, which was the figure most desired, was too uncertain to be determined by the short specimens used. A slight permanent set developed at rather low loads; and, as nearly as could be determined, the curve of permanent set plotted against applied loads, would be quite smooth.

So specimens over 20 in. long and 1 in. in width were tested, primarily to fix as closely as possible the point at which a permanent set became very evident. This was still rather elusive and could not be definitely determined; but it was fairly clearly shown to lie between 30 and 45 pounds per inch of width for both 60 mesh and 70 mesh wire—the figure for the finer wire being probably higher than for the coarser.

From this it appears to be necessary to assume about 40 pounds wire tension per inch of width in calculating the pull of wire on breast rolls, bottom couch rolls, and wire carrying rolls, and in determining the resulting loads on bearings; although normally the running tension may be expected to be much lower.—*S. K. F. Industries*, New York.

MAYOR BATTLE OF THOROLD SUFFERS FURTHER LOSS

Mayor Battle of Thorold who recently had his left leg amputated as a result of gangrene due to rupture of hardened arteries, and who had been making an excellent recovery, suffered another ruptured bloodvessel in his left arm and as a consequence it has had to be amputated also. He is making rapid progress toward recovery and it is hoped by the surgeons that no further operations will be necessary. Mayor Battle has a host of friends in the Niagara peninsula and he is being generally commended for the fortitude and good humor that he has shown in these trying circumstances.

With the Woodsmen

By O. M. PORTER

Secretary-Treasurer, The Woodlands Section

Study of Southern Pulpwood Problems

A survey of the available supplies of spruce, hemlock and balsam pulpwood indicates a rather general shortage of this material, with, unfortunately, only too little definite information and facts as to the location and extent of the remaining pulpwood tracts, and the rate of growth on the lands which have already been cut one or more times for pulpwood, lumber or other forest products. The approaching pulpwood scarcity, together with the supplies of cheap labor and fuel in the South, indicate unusual opportunities for the development of the paper industry and the southern pineries. Foresters who are familiar with the character of tree growth in these regions claim a rotation for the southern pines, at least for pulpwood size, of from fifteen to twenty-five years. This means that under sustained yield management a tract of southern timberland would produce pulpwood not less than four times as fast as a tract of equal area in the north.

The chemical problems in utilization of the southern pine are rapidly being overcome, so that pine pulpwood will gradually find its way into many other grades than coarse wrapping and kraft papers. This movement for the utilization of the southern pine in the manufacture of paper is reflected in requests to the Woodlands Section for information relative to the methods of peeling pine pulpwood, and the costs of pine logging operations.

Information relative to the methods and costs of peeling southern pine has recently been summarized by the Woodlands Section in a short report compiled from data supplied by members of the Section who have had experience in the utilization of southern pine. The report covers the methods of peling, tools used, bark disposal and costs. One interesting statement gave the present price of cutting and peeling a cord of 5-foot 160 cubic foot wood in southern Maryland and Virginia as $2.50, while the price two years ago was $5.00 per cord.

Bud Worm Damage in the Lake States

Dispatches indicating severe bud worm depredations in the Lake states, particularly Minnesota, were verified by R. S. Kellogg, secretary of the News Print Service Bureau, during his recent automobile trip through this region. The dispatches said that the killing of the trees by the bud worm was not only seriously reducing the productive capacity of the pulpwood lands of that region, but was also creating a very serious fire hazard, in that utilization of the deadened timber was difficult, and the dead and dying trees only added fuel to the too frequent forest fires of those states.

Mr. Kellogg took this matter up with State Forester Cox of Minnesota, who confirmed the newspaper reports, saying that very material damage was being done in that State. The budworm situation in some of the Canadian provinces is so serious that New Brunswick, for example, is offering budworm-killed spruce at $4.00 a thousand as against $5.00 for green timber. This matter of budworm infestation and methods of regulation and control were covered in detail in the report of the Woodlands Section's second annual meeting, recently distributed to members of the Section.

Pulpwood from Finland

One of the larger paper companies of the Middle Atlantic Coast states recently purchased a quantity of mixed rossed spruce and fir pulpwood in Findland. The wood was found to be very uniform and of excellent quality. A Pennsylvania mill is reported as being able to buy Canadian pulpwood more cheaply than it can produce pulpwood from its own lands located within three counties of its mill. The trend of stumpage prices continues to rise gradually, however, and many of the larger companies have already made or contemplate sufficient purchases of pulpwood lands to eventually meet at least a large share of their requirements.

It has not been many years since paper companies were able to secure the necessary supplies of pulpwood almost at their front doors. But the forests have been gradually cut off until now there appears to be a very real gap between the present supplies of available wood and that which these cut over areas will again produce if the losses to mature timber and growing stock from fire are controlled. It is not strange then, that some of the more progressive companies are already considering the pulpwood supplies of the world, rather than those of the counties or states in which their mills are located. Offerings of pulpwood from Sweden, Findland, and even from Russia no longer attract comment because of the appreciation which is growing out of the pulpwood timber shortage of the United States, Canada, and other great forest countries of the world.

Cost Accounting for Logging Operations

The News Print Service Bureau has just published a pamphlet covering suggestions for the application of practical cost accoounting methods to logging operations. This pamphlet is the result of a two years' study by G. A. Ware, the Bureau's cost accountant. The system outlined is designed primarily for the use of paper manufacturers who carry on their own logging operations for the raw materials of their pulp mills, but its forms and charts are so complete that the system is applicable to any form of logging operations. The report may be obtained from the News Print Service Bureau at a cost of $10.

The Woodlands Sections has just sent its members a communication dealing with the number of sticks per cord of pulpwood, together with tables for the several pulpwood species and forest regions. In addition to these, there is data relative to the number of solid cubic feet of wood per cord, based on the size and class of the material. The Section plans to continue its studies along this line with the view to obtaining a quantity of data for general reference. Members of the Section are encouraged to write in for information on their specific woods problems, many of which, though peculiar in phase to the individual operation, are yet generally quite common to the entire paper industry.

The Section has under consideration at present the feasibility and methods of driving such hardwoods as poplar and yellow birch. Correspondence with members seems to indicate that in many instances at least the success of utilizing such hardwoods as poplar and birch depends quite largely on the drivability of these species. Data is being collected on the drying, rafting and plugging of hardwoods in preparation for driving, with the view to making this information available to the paper industry at large.

TO OPEN SECOND WATERTOWN MILL

The International Paper Company is making plans to reopen its Ontario mill, located at Glen Park, in the Watertown, N. Y. division. The No.. 4 mill at Watertown was reopened about a month ago, after being closed for a year following the strike. It is expected that the C. R. mill, also at Watertown, of the International Paper Company, will be started up after the Ontario mill has been in operation a little while.

Why The Refractory Is A Factor In Furnace Life and Capacity

By I. S. PIETERS, Engineering Dept., Jointless Fire
Brick Co.

There never was a time when the saving of coal through proper attention to furnace construction and maintenance was so necessary as now. A solid, air-tight setting is most important. The *Pulp and Paper Magazine* will be glad to assist readers in giving information as to sales agents for Canada for the material described in this article.—Ed.

In the modern boiler room the furnace imposes the limitation. How soon the limitation is encountered depends upon how carefully the furnace is designed and the wisdom used in the choice of materials comprising it. It is only comparatively recently that the importance of the furnace has been fully appreciated.

It is the furnace that determines the maximum combustion efficiency that can be attained; it decides the economical efficiency that should be maintained. It is the furnace that is usually the first to wear out and so compel a shut down for repairs. It is also the factor that ordinarily determines how "hard" a boiler or a fire can be worked. The more closely boiler room operation is examined the more apparent will it be that the furnace is all-important. A study of conditions shows immediately why this is the case. Further, it explains why of recent years the furnace has come in for the largest amount of attention and the most radical changes.

Perhaps the most prominent tendency during the last few years has been that of operating boilers at higher rates of evaporation. One boiler horsepower is nominally equivalent to 10 sq. ft. of boiler heating surface; when every 10 sq. ft. of heating surface evaporates 34.5 lbs. of water per hour, the output is said to be one boiler horsepower. Actually, however, three to five times this amount of water may be evaporated for every square foot of heating surface. This means that somewhat more than three to five times the amount of coal must be burned in the furnace to evaporate this larger amount of water. By working existing equipment many times harder than the nominal, a given investment is made more useful or the money sunk in new apparatus may be reduced. It pays to work apparatus "hard."

Higher combustion rates necessitates radical changes both in the design of the furnace and the materials that go to make it. Larger furnace volumes are required so that the larger quantity of air and gas may mix with that intimacy so necessary for complete combustion. As ignition is largely a matter of time as well as temperature it has been necessary to increase the length of flame travel as well as the space available for mixing the air and combustible gases. To accomplish this, the height as well as the volume of the furnace has had to be increased.

Because of the larger quantities of coal going into the furnace at these high evaporation rates, the fuel beds are thicker and so offer higher resistance to the flow of air. Higher drafts thus become necessary as well as much larger volumes of air. Mechanical draft is resorted to, therefore, to handle the air and mechanical stokers are used to handle the fuel.

In consequence of these developments the furnace problems that have come about are twofold. They are those due to higher temperatures on the one hand and those due to mechanical considerations—greater height and greater volume—on the other, and they are closely interrelated. Before discussing the problem on account of the higher temperatures and larger furnaces or attempting to explain why they occur or how they may be mitigated and even eliminated altogether for long periods, a thorough understanding of what the furnace walls and interior must accomplish is worth while.

Conditions the Furnace Must Meet

The structure that constitutes the furnace must not only have sufficient strength to support itself at all temperatures that may occur, but it must be capable of supporting whatever loads may be applied to it and whatever stresses may be exerted over the range of temperature that occurs under the most extreme conditions.

Part of the furnace, the inside, must be capable of withstanding for a reasonable length of time the highest temperatures produced in the furnace—namely temperatures between 2,800 and 3,000 deg. F. It must also be capable of standing up under the erosion and attrition of coal, ash and clinker passing along it and adhering to it as well as attack by the fireman's slice bar while he endeavors to break off lumps of clinker and molten ash. The furnace lining must not be chemically reactive with the ash and clinker or impurities in the coal (which usually have low fluxing temperatures) otherwise the lining will surely flux and melt. It should have a minimum coefficient of expansion and contraction. The material must not be brittle or it will crack on rapid heating; but it must be tough so as not to be susceptible to abuse. It should not be too porous otherwise it will allow air to flow from the outside into the furnace; this cool air, of course, lowers the furnace temperature, wastes heat and fuel, may cause damage to the intensely hot boiler heating surfaces, may overtax an already overloaded stack and hasten the spawling of the refractory in the furnace. The flow of heat from the inside to the outside should be a minimum.

Each of these requirements — refractoriness, physical strength, surface hardness, low expansion and contraction coefficient over a wide temperature range, low heat conductivity, imperviousness to air — is of vital importance. These characteristics and requirements differ so widely that no one material can meet them all. Therefore, furnace walls and settings are no longer made up of one material as was once the case but three, four or more materials are used. Each serves an entirely different and distinct purpose; and in this way each material can be chosen specifically for the special condition it must meet.

This, in brief, explains why the furnace of brick or even of two different kinds is rapidly disappearing. It is the reason why the modern furnace with the longest life, lowest upkeep cost and highest thermal efficiency working under the extremely severe conditions of today is now invariably composed of three and sometimes four and five different materials.

Typical Furnace Difficulties

Most furnace troubles originate inside the furnace and these, in turn, contribute to, if they do not actually cause those that take place on the outside. Usually the trouble starts at the joints between bricks. Every joint is a weakness and every layer of cement or mortar a possible source of trouble. It is very easy to understand why.

Each brick expands and contracts individually according to its individual characteristics and the temperature to which it is subjected. Bricks differ quite widely among themselves in shape, size and ability to stand up under high temperatures; some shrink more than others and some never reach normal size again after heating. Bricks that are not true to size and shape exert a side thrust against adjacent bricks. Bricks that are too hard are often brittle and crack with sudden temperature changes, on account of internal pressure due to unequal heating or external pressures.

Consequently, the interior surface of the furnace lining when of brick may be smooth and have all bricks flush when first placed into service but it soon assumes a rough and ragged surface to the fire as the individual bricks work about and some retire and others tend to protrude into the furnace chamber. Those bricks that are most exposed to the intense heat are the first to melt at the corners and edges. As they wear down, other bricks gradually protrude and these too melt so that an endless cycle of deterioration goes on.

The cement used to hold the bricks together is a source of trouble in the majority of furnaces using brick. It is an important factor in determining the strength of a wall as well as the thermal efficiency of the furnace and its life.

The layer of cement must necessarily be very thin—the thinner the better. On cooling after being heated, it usually shrinks and hardens. This weakens the joint, of course, and leaves voids where the cement was originally. As the bricks move on expanding and contracting, more cement is forced out from between the joints while some of its melts so that the bricks settle down and many of them become loose while others jam. One commonly finds bricks that can be lifted right out of the wall. It can readily be seen why the brick-work under these conditions is short-lived when the fireman roughly tries to dislodge adhering clinker from loose and crumbling brickwork. As the bricks disintegrate and the joints between bricks loosen up, more and more air tends to enter the furnace from the outside and the greater becomes the waste of heat from excess air.

Troubles with brick furnaces can be reduced, of course, by using only brick that is true to size and shape and that runs uniformly as to material. Further, the cement must be chosen so that it does not act as a flux for the brick and that it has as close as possible the same coefficient of expansion and contraction as the bricks it is to hold together. The great difficulty with brick, however, is that bricks in one consignment will vary among themselves. It is difficult to keep sizes uniform; the clay used may come from different locations; the heat treatment may differ so that some of the bricks are more porous, more brittle or of lower strength than others. Bricks in the same consignment may have been collected from different batches that have passed through different ovens so that while nominally the same brick they may have quite different characteristics. There are many opportunities for differences to creep in, and every difference in treatment and manufacture means a possible source of trouble.

At best brickwork is patchwork where not only the brick but the cement that binds them and the men that lay them are variable factors. The periodic heating and cooling to which the bricks are subjected in service soon show the results. As a furnace may require from several hundred to many thousand bricks it is obvious that the opportunity for trouble is very great.

Troubles, frequent repairs, comparatively short life and high upkeep cost are inherent to the brick setting and the only scientific way to overcome them is to employ a one-piece or monolithic furnace lining.

How to Solve the Furnace Problem

Since experience as well as theory show that the joints are the weakest parts of the entire brick lining and also the chief cause of trouble, it can immediately be seen that if the joints can be eliminated an immense advance has been made toward doing away with furnace troubles. The elimination of joints almost entirely is probably the most radical step toward longer furnace life and the extension of furnace limitations that has taken place in a long time. This explains why the one-pice, monolithic or jointless lining is proving such a success, and why it is being used especially where furnace conditions are severe, where shut downs for replacements must be minimized and where high upkeep costs have become so serious as to compel that combative measures be adopted.

With the monolithic lining there are no joints. There are no bricks. The lining is a one-piece lining of the same material that after the first heat assumes a smooth, tough surface. There are no protuding parts to be exposed to the heat, to form the nucleus for the building up of clinker masses or to melt down and cause trouble and expense. There are no joints to cause weakness, to serve as channels for cold air to enter the furnace; no bricks to loosen and fall out; no cement to fuse and disappear and no unequal expansion and contraction.

The one-piece, jointless lining is monolithic, of homogeneous material with one coefficient of expansion. Expansion and contraction occur en masse, without unequal strains and without cracks. There is no chemical action between different substances; it all behaves alike for it is all of the same substance. The lining material is chosen for its ability to withstand heat and furnace conditions. It is a refractory used as a refractory where the requirements are for a refractory, so that all the troubles that do occur with the brick are absent.

When a one-piece or jointless furnace lining is used, the rest of the furnace may be built up of materials that insulate, that is keep the heat in the furnace, and have the strength to carry whatever load may be applied. Usually the insulating material is placed next to the refractory or heat-resisting material, and then is the outside brick used for its strength as a support and protection for the insulation and refractory. Quite often the outer brick is covered with an impervious paint to exclude air from seeping through the brick. As the jointless furnace lining seals up the whole inside of the furnace, the entry of air through it is further prevented, the increase in combustion efficiency due to this type of lining usually results in an increase of from 1 to 3 per cent in carbon dioxide.

The jointless furnace lining by doing away with all the inherent defects of the brick setting has increased the life of the furnace anywhere up to 500 per cent, reducing the cost of upkeep proportionally. It has enabled boilers to operate for more than a year and sometimes for two years without a shut down for furnace repairs where with brick, a new lining was required several times a year. It has increased combustion efficiency and so lowered the cost of fuel. It has enabled boiler evaporation to be increased economically far beyond the range formerly possible with economy.

In short, the elimination of joints in the furnace by adopting a highly refractory one-piece lining without any joints, has permitted big economies to be brought about and at the same time has extended the limitations of the furnace enormously.

People read newspapers, books, magazines, and placards, which are printed on about three-sevenths of all paper manufactured; they box up articles in about one-fourth of it; wrap purchases in one-seventh; write and typewrite on one-eighth; put a trifle more than one-twentieth of it into buildings and upon walls; and use the remaining one hundredth in miscellaneous ways.

A Dictionary of Pulp and Paper Mill Terms

(Continued from issue July 20.)

Sulphite procecss. The process whereby wood chips are cooked in a solution of bisulphite of lime, with heat and pressure, to dissolve the non-fibrous portions and produce a pulp suitable for paper making. Spruce, balsam, hemlock, and inferior pines are treated by this process. (See **Mitscherlich.**)

Sulphite Turpentine. See **Cymene.**

Sulphur. An element, tonic weight 32.-07, specific gravity 1.95 to 2.05, melting point about 120°C, boiling point 445°C, ignition point 255°C. Essential to the sulphite pulp industry as the source of its cooking liquor.

Sulphur Burner See **Burner.**

Sulphur Dioxide. The gas produced by burning sulphur in air. Formula SO_2 molecular weight 64.07. 1 litre weighs 2,9268 grams. Density, 2.2638 air = 1). Dissolved in water its solution is sulphurous acid. Passed into lime water, milk of lime, or water in contact with limestone, calcium sulphite forms, which dissolves in excess of the gas forming bisulphite.

Sulphur Trioxide. A pungent gas, SO_3 formed by oxidation of sulphur dioxide, which combines with water to form sulphuric acid. A nuisance in the sulphite pulp mill. (See **Sulphuric Acid.)**

Sulphuric Acid. H_2SO_4, also called oil of vitriol. A powerful corrosive liquid, usually sold in concentrated form. Destroys wood by abstracting water from the cellulose aggregate. When diluted is actively corrosive on metals. 66° acid is about 93 per cent. H_2SO_4. Forms in soluble calcium sulphite in the pulp mill.

Sulphurous Acid. See **Sulphur Dioxide**

Super Heat. Heat applied to or carried by steam in excess of the heat normally present in steam at corresponding pressure. Steam cannot be superheated in the presence of liquid water.

Super Calender. An extra calender usually in the finishing room, for imparting extra finish to paper in the web. (See **Calender.)**

S V R Rectified spirits of wine, first letter of Latin words, Spiritus vini **rectificatus.** (See **Rectification.)**

Sweat Roll. A cold hollow roll about same size as pony roll, at end of dryers on paper machine to help in carrying sheet over calenders. It helps to bring the moisture in the sheet to normal.

Syphon. A device by which the pressure of the atmosphere is applied to cause liquors to flow in pipes over obstructions by the weight of an unbalanced portion of the liquor in the lower, or longer, leg or end of the system.

T. S. See **tub sized paper**

Two Tower System. A system of preparing sulphite liquors wherein one tower is used for strong liquor and the second tower for week liquor, using the excess gas from the strong acid tower. By properly arranged piping and valves the two towers are interchangeable.

Table Bar. The bars extending along each side of the Fourdrinier part and supporting the bearings of the table rolls.

Table Rolls. The rolls of the Fourdrinier part placed in a series between the breast roll and the couch roll, supporting the paper making surface of the wire.

Tachometer. An instrument for indicating speed of revolution. One is usually attached to one of the rolls at the dry end of the paper machine and indicates the speed of the paper in feet per minute.

Tackle
(1) The means for handling heavy rolls in changing wires, etc.
(2) A term referring in general to the flybars and bedplate in a heater.

Tailings. Refuse knots or chips in a chemical pulpmill, or rejected material from bull screens in mechanical pulp mills. In general any rfuse or material of no value, or rejects at some stage of manufacture.

Tailngs Screen. A screen to sort the material rejected by other screens. On occasion this may contain much good stock, which is thereby recovered.

Tail Race. The channel carrying away the water discharged from the draft tube after it has passed through the water wheels.

Tail Rod. A rod extending upward from the piston in a grinder cylinder, serving as a guide to the piston and the pressure foot.

Talc. A mineral, silicate of magnesia, often called soapstone. It is very soft and when well ground is used as a filler for paper.
Agalite and asbestine are trade names for fillers prepared from similar minerals.

Tamarack. A tree, **Larix Laricina,** commonly called larch, sometimes hackmatcak. In Quebec "Epinette rouge." A conifer, but not evergreen. Yields fair pulp, but of poor color, by all processes but not readily bleached.

Tank System. See **Tower System**

Tannic Acid. An organic acid obtained from the bark and wood of many trees, such as the oak, hemlock quebracho. Used as a test for animal size in paper.

Tap
(1) To enlarge hole in metal, by cutting a thread therein.
(2) The tool used.
(3) To draw water or stock from a tank.
(4) A small valve for letting water or other liquids out of pipes.

Target. A heavy baffle plate of bronze or iron placed on the inner side of the blow pit, or hung suspended, against which the pulp strikes as it is discharged from the digester through the blowoff pipe. It helps to open the stock, i.e. to break up the chips which, even after cooking, retain in a large measure their original form.

Temperature. The degree to which substance is heated or cooled, not a measure of quantity.
See **Thermometer**

Terra Alba. See **Calcium sulphate**

Testers. See **Ashcroft and Mullen**

Thermal Units. The British Thermal (B. t. u.) is the amount of heat required to raise the temperature of one pound of water at 63° F. through one degree Fahrenheit. Its mechanical equivalent is 778 foot-pounds. The calorie (Cal.) is used in scientific measurements. It is the heat required to raise one gram of water at 17° C. one degree centigrade. Its mechanical equivalent is 427 metrical grams.
1 calorie per gram is equivalent to 1,800 B. t. u. per pound.
1 B. t. u. = 251.99 calories
1 calorie = 0.003968 B. t. u.
1 large calorie (Cal.) = 1000 cal.

Thermit. A process of welding iron whereby very large sections can be successfully joined. The agent is a mixture of finely ground aluminum and iron oxide mixed in such proportions as to give the reaction,

$$Fe_2O_3 + 2\,Al = Al_2O_3 + 2\,Fe.$$

The mass is ignited in a crucible and poured into the specially prepared mold mound the point, the great heat of the reaction melting the iron to be repaired. The procedure varies with different cases.

Thermometer. An instrument to measure the temperature of bodies usually accomplished measuring the expansion and contraction of liquids or solids under the influence of heat. Two scales are in general use based on the boiling and freezing points of water at sea level, 760 mm. of mercury or 14.697 lb. per square inch absolute pressure. The earlier Fahrenheit scale is based on the lowest temperature that Fahrenheit, its originator, was able to secure. This he called zero, and with mercury in a tube he noted the expansion or rise to the boiling point of water, dividing the total rise into 212 parts or degrees. This placed the freezing point of water at 32°, thus there were 180 degrees between freezing and boiling points of water. The later Centigrade scale, fixed the freezing point of water at zero and the boiling point into 100 degrees. divides the distance between it and Thus the relationship between Fahrenheit and Centigrade degrees is as 100 is to 180 or 5 to 9. Fahrenheit is converted to Centigrade by subtracting 32, dividing by 9 and multiplying by 5. Centigrade is converted to Fahrenheit by dividing by 5, multiplying by 9, and adding 32.

Thickener. Apparatus for increasing the concentration of fluid stock by the removal of a portion of its water. See **Decker.**

Thiosulphuric and Thionic Acids. Acids sometimes present in sulphite cooking liquors, which due to the influence of heat on the solutions, are broken down toward the end of the digestion yielding sulphur trioxide, sulphur dioxide and free sulphur.

Third Hand. The third member of a paper machine crew. His duties are generally to attend the winders and dry end of the machine under the second hand. On small machines he may be the junior member and also tend broke and do the oiling.

Thrasher or Whipper
(1) A reel which is rotated against the felt to loosen adhering fibre which is washed off by an accompanying spray of water.
(2) A machine used in the preliminary treatment of rags whereby the dust is taken out.

Three Tower System. In some sulphite mills a third tower is used to absorb the gases relieved from the digester during the cooking operation while in others the third tower is used as a spare in case of shut down of one of the others.

Tightener
(1) An arrangement whereby a roll having a sliding bearing is controlled by weights acting against the pull of the felt running over it, thus keeping it taut.
(2) An idler pulley, pressing on a belt.

Tilghman Benjamin Chew. An American chemist who in 1866 obtained the first patents for preparing chemical pulp by cooking wood in a solution of sulphur dioxide in water, with or without the addition of bisulphites of lime or magesia.

Tin. Tin salt — tin crystals — stannous chloride, used in connection with certain dyestuffs in coloring paper.

Tintometer. An instrument for comparing and recording numerically the color values of surfaces and liquids. Lovibond's tintometer uses slips of standard yellow, red and blue glass of varying depths of color which may be superimposed to get composite values of transmitted light.

Also Ives Tintphotometer.

Tissue. Very thin paper in many varieties, usually unsized, nearly transparent, so-called originally not from its texture but from its use in separating the folds of fine silk tissue.

Titration. The act of running a standard solution from a burette in determining the strength of a solution, as cooking liquor.

Toilet Paper. Very thin usually M. G. papers put up in packets of cut pieces or in rolls with or without perforations.

Top-Sized. See **tub-sized**

Tour. The portion of the twenty-four hours during which workers are on duty. In a two shift day, work is usually seven A. M. to 6 P. M. for day, usually seven A. M. to 6 P. M. for day tour, and from 6 P. M. to 7 A. M. for the night tour. The three shift day is divided into equal tours of eight hours each. The terms also infers the weekly rotation in consecutive order. (usually pronounced "Tower".)

Tower System. In sulphite mills the production of liquor in towers containing limestone, as contrasted with the milk of lime or tank system. In the tower system the burner is delivered to the foot of a tower filled with limestone over which water is trickling. In the milk of lime system the gases are drawn or forced through tanks of milk of lime.

Tracheids. The wood fibers of coniferous trees, such as spruce and fir, characterized by curiously pitted cells readily detected in chemical pulp when examined under the microscope.

Tracing. Paper rendered transparent for tracing purposes by being soaked in a solution containing a mixture of Canada balsam, turpentine and a trace of vegetable oil, and then hung up until dry.

Transfer. Paper used for the transfer of colored pictures and designs to tin vessels and boxes used for packing food and condiments. The paper is first surfaced with starch and then coated with gum or dextrine. The coating mixture is such as will readily strip from the paper. When put down on lithographic stones and the back dampened all the ink of the transfer is left on the stone.

Trap. A device for preventing steam waste or for sealing a pipe as in the familiar gooseneck curve used under sinks. See **steam trap.**

Travel. The extreme distance covered by any reciprocating piece of machinery.

Triple Effect. An evaporator which removes vapours from liquids by exposing them in succession to three descending conditions of heat, usually the first effect is under pressure, the second effect under little or none, and the third effect under vacuum. The heat of the liquor under descending pressures or vacua is sufficient to cause vaporization in the next unit, or effect.

Triplex
(1) Paper surfaced with three colors used for tickets and wrappers; term also applied to stiff paper composed of a middle surfaced on either side with colored papers.
(2) A plunger pump having three pistons (simplex, duplex).

Tripoli
(1) Esparto grass coming from Tripoli, Northern Africa. Inferior to Spanish grass.
(2) A fine natural material used for polishing purposes.—Kieselguhr, diatomaceous earth, silex.

Trotters (or bumpers). The parts of the mechanism which, in conjunction with the cams or knockers, operate the diaphragm of flat screens or imparts movement or vibration to the cylinder or vat in some types of rotary screens.

Trough. See **washer trough.** Generally any narrow tank of which length is the principal dimension.

Tub. A tank—frequently refers to a beater, also to a sizing vat, hence "tub sizing".

Tube Papers. Soft unsized papers, made with a good percentage of rag, for making tubes or spools on which the yarn for spinning machines is wound.

Tub-Sized. Paper was originally and is now at times sized by dipping into a vat or tub of animal size, in distinction from engine sizing, when the size is mixed in the pulp. Tub sizing is often referred to as top sizing. The effect is obtained on the paper machine by placing a vat (tub) and rolls at a point in the dryer part about two thirds of the distance from the wet end. The dried sheet is carried through the vat and squeezed between rollers being afterwards loft dried, or pressed over the remaining dryers.

Turmeric. A chemical test paper prepared by soaking filter paper in an extract of turmeric root. Used for detecting traces of alkali.

Twaddell's Hydrometer Scale. (Tw.) Used for measuring the density of liquids heavier than water.
Reducing Tw. degrees to specific gravity use this formula $S = \frac{5T + 1000}{1000}$ or to Baumé degrees use this — $Bé = \frac{145T}{200 + T}$ This instrument is most frequently used in soda pulp mills and for bleach liquors. See hydrometer.

(To be continued.)

A FORESTER'S EXPERIMENT

A forest ranger of repute has given the Canadian Forestry Association a unique proof of the great danger of lighted cigarettes in or near the forest. As a means of getting information on the number of fires than can be started by cigarettes along the trail, he covered a distance of a mile dropping at intervals twenty lighted cigarettes. Nineteen of them were found to have set small fires, all of which of course were immediately extinguished. The experiment was conducted in a dry peat country. The ordinary smoker little suspects the lurking danger in the woods. Hundreds of the worst forest fires recorded in Canada this year have been due to the evil habit of tossing away lighted tobacco.

Presented Dryden Saftey Shield

The occasion of the presentation of the trophies of the 1921 Competition to the management and employees of the Dryden Paper Company on the evening of July 11th, by Mr. A. P. Costigane, secretary and engineer of the Ontario Pulp and Paper Makers' Safety Association, was appropriately celebrated by the holding of a smoker in the paper mill hall.

The celebrants foregathered at 8.30 and for the first hour were engaged with cards and other social games. At half past nine Mr. J. B. Beveridge introduced Mr. Costigane, saying that congratulations for the creditable showing made by the Dryden Paper Company were due to the employees rather than to the management.

In presenting the flag and turning over the shield into the custody of Mr. Harry Davidson who had been selected to receive them on behalf of the employees, with his congratulations, Mr. Costigane pointed out that the splendid shield was mounted on wood sawn from a beam of the old Don Valley mill near Toronto—the first paper mill in Ontario.

Presentation Address

"Mr. Chairman and Friends:—I need hardly say how pleased I am to be present to-day. I have been looking forward all during the year to the event which is now taking place and to the pleasure of being able to congratulate the winners of one of the shields and flags on their good record during the year 1921. You will possibly appreciate your efforts more when I give you figures of accidents in your group during that year.

As you know, the mills competing were divided into two groups, A and B, A including all mills employing 200 and up and B all mills employing under 200 people. The idea behind this was to make the competition as equal as possible. It would not have been fair, for example, for mills like your own to compete with small mills employing 20 to 30 men, as the hazards in the large mills are much greater owing to the larger number of departments and the more varied operations. You are the winners of group A with a score of non-fatal accidents involving lost time amounting to 374 days which is equal to 2.31 days lost time per full time worker. When I tell you that in your group the total number of non-fatal accidents was 965 involving lost time amounting to 17,148 days, equal to 3.7 days lost time per full time worker, and that excluding 6 fatal accidents. Your record, therefore in comparison with the whole group is good, but I am hopeful that your record during the current year will be much better."

Mr. Davidson received the beautiful silk Canadian flag with its appropriate inscription, with a brief but well expressed and appropriate address, after which Mr. Costigane resumed his address as follows:—

"This accident prevention work has now got beyond the missionary stage, nevertheless it might be worth while mentioning some of the things that go to make success. I am not much given to quoting Scripture nor do I wish to appear in the role of preacher, a role for which I have not the slightest qualification, but if you will pardon me I will quote one text which I think aptly applies to accident prevention, viz — "Am I my brother's keeper?"

Safety campaigns have been started in many industries, some have met with great success while others have been failures. An analysis of the failures reveals the fact that a fundamental psychological element was absent, and that absent element was a sense of personal responsibility for the other fellow's safety. Many an effort has been made to create a perfect record, and the record spoiled by the thoughtlessness of some individual in regard to the safety of a brother employee. I have from time to time met men whose idea of safety could he summed up by the phrase,—'I will watch my step, let the other fellow look after his.' In accident prevention work we find that the most successful are in plants where the unselfish principle of looking after the other fellow's safety is put into practice.

There are thoughtless acts committed every day which are in the nature of a crime, if not legally so described, then most decidedly moral crimes. Take, for instance, a man who to save himself a little trouble, nails the elevator safety gate in an up position and then proceeds to take the elevator to some other floor. That man to my mind is committing a crime, and if through his carelessness or laziness some one else is injured the responsibility rests with the man who left the elevator shaft unguarded. I could give you numerous instances of guards being removed and gears and belts left exposed to trap the unwary, and recite many accidents caused by the carelessness of someone else, all of which would serve to illustrate the truth that no one can shirk the responsibility of being his brother's keeper.

There is another aspect of a competition such as is now going on in our industry, and that is the sporting aspect. I have no doubt you have all at one time or another participated in such games as baseball, football, hockey, etc., and when playing matches striven all you could to ensure the success of your own side. Suppose in one of those games one of your players by carelessness, selfishness or stupidity committed a fault as a result of which the whole team was penalized. What would you think of him? I guess the other players on the team would feel sore and would not hesitate to point out the errors of his ways to the culprit and possibly in language more forcible and picturesque than I would be permitted to use from this platform. If such is the attitude towards a transgressor in a game of amusement why should not the same attitude be adopted in a competition for the best accident record, when the saving of the lives and limbs of men and women is the prize at stake?

I venture to say that if all the employees in the Dryden Paper Company, from the General Manager down, play the game in this competition, the result at the end of 1922 will be both astonishing and gratifying. I wish you success."

The address was received with marked and serious attention.

In the entertainment which followed (with Mr. F. M. Offer acting as M. C.) the good fellowship maintained among the employees of the Company, staff included, gave one an inkling of the reason for the Dryden mill occupying first place in the safety competition. Such good fellowship could not exist without each man having a personal interest in the welfare of his fellow; and such fellowship cannot but militate against carelessness on the part of the individual in matters affecting the safety of life or limb of his brother. We are indeed our brother's keeper, as Mr. Costigane said.

Several boxing bouts were staged during the evening, much to the enjoyment of the audience. E. Payne, in contest with Messrs. Kine and Fergusson, seemed easily the favourite with the book makers.

Two young Scandinavian aspirants gave a real exhibition of what can be accomplished if you don't care whether you get slugged or not, retiring on the call of time in gory triumph. An Overture and several classic selections by Harry Gammon, organist of St. Luke's Church; songs by Mr. Lewis of screen fame; and Messrs. Payne, Kine and Howarth in old-time favorites created the proper atmosphere for "Dear Old Dryden", "Old King Cole" to the

200th attenuation, and a new song by the Bard of Dryden. Excellent refreshments were served, and the evening voted a huge success by the participants.

The flag presented will remain the property of the recipients for all time, the shield only during such years as first position is attained.

British Trade News

America's Views of Post-War — Losses in England

(From our London Correspondent.)

London, July 8, 1922. — Not a little surprise is caused in papermaking circles by an article which appears in the commercial supplement of the "Times" here from the pen of H. J. Berger, the editor of "The Paper Trade Journal" in New York. He makes the startling statement that the losses in British papermaking are nothing compared with those which have had to be met by the makers in America. It is quite evident Mr. Berger has not closely followed the trend of events in England—particulars of which have been set out in the "Pulp and Paper Magazine of Canada" from time to time—or he would not make any comparison. The difference between the two countries during and since the war is that while one was making money and lending out money, the other country was fighting for its existence on the face of the map and running to any nation from whom money could be borrowed. Leaving the black period of the war out altogether—because there was not as much as a piece of paper to wrap a pound of soap up in the stores and shops in England—it is interesting to look at events since the Armistice. Before Mr. Berger's article appeared in London, Mr. C. R. Seddon, on June 23 last in his annual address to the Federation of Papermakers, as President, said, inter alia, "The prosperity which arose after the Armistice owing to the extraordinary demand for commodities irrespective of cost was short lived, and nothing has been more astounding than the mistaken view that an era of unlimited prosperity had set in. Labor demanded increased wages, with the result that prices forthwith rose to a point which nullified the increase and resulted in a decreased demand. The whole world has become impoverished by the war. We have raised a national debt, which now hangs upon our enterprise like a millstone, and makes a call upon our industry which dispels the hope of high wages and short hours unless and until the produce of industry by concentration of effort, by cooperation of energy, and by increase of output gives a margin of profit out of which these desirable objects may be provided. Owing to the decreased purchasing power of the nations, there will be a greater competition to supply a less demand, which will without doubt result in lower prices. It is contended by labor that high wages give a greater purchasing power and consequently assist trade, and every employer would welcome the opportunity of complying with this argument; but, unfortunately, we are dependent for our supplies upon other countries than our own and the unavoidable law of international competition brings us back to the market value of our own products. Industry can only stand the wages which the product of industry can yield, and when a business ceases to pay it ceases altogether and the obvious consequence is unemployment."

What About Taxation?

This is only one element set out by a man who knows what he is speaking about. When the Armistice or "cease fire" call sounded — the workers of the British paper mills were in France and Belgium fighting and the few mills open and running were lucky with a staff of 50 to 60 p.c. England then had to trust to U. S. A. and other places to subsidise paper supplies. After the Armistice there was an artificial domestic demand, which Mr. Seddon ably deals with in one element, but he has not dealt with the heavy taxation — Government and local: incidentally to help pay back what was borrowed from America—which British papermakers had to grin at and bear. Imagine the consternation there would be in America if the Government or tax collector walked into the mills and said "your profits are 80 p.c. over and above 1913, we take 70 p.c. to pay for the costs of the war—and the money borrowed from England." That was the state of things in England —and we are not out of the wood yet.

Again, slapped on the head of excessive taxation came strikes in labor circles. When the mills were being reopened, or being replenished, railroad men declined to work, coal miners followed, and then the engineers. In some parts revolution broke out. These "incidentals" occurred in the "period of prosperity", after the Armistice, when U. S. A. was buying pulp cheaper than any English mill. Added to these set-backs were high railroad rates, insurances, and rates for Government insurances on men employed in mills who earned less than £5 a week were increased for the millowners to pay. It will thus be seen that paper mills in the United Kingdom were not being run in a land of "milk and honey" — as some people imagine.

Dumping Market of the World

Further, the tariff walls of America protect America. England is a free country. When the Armistice ended the British paper mill owners started putting their house in order. In addition to a poor domestic demand, heavy taxation, unsettled labor conditions, and the costs of the war to face—with high bank rates—there arose the great question of dumping.. In the British market, month by month, tons of cheap paper was dumped into English ports and sold at a price which no British mill could dream of turning it out at, and out of 48,000 employees usually engaged in the paper mills 25,000 were totally unemployed and 16,153 were on short working hours. This was due to paper dumped from U. S. A., Finland, Germany, Sweden, and Norway. As a consequence British makers reduced their prices below the cost of production and kept the machinery running for the sake of oiling it. Does any sane person think such conditions prevailing were paying paper mills? Had America such "dreadnoughts" to batter down? Someone may say: "but the British had the markets of the Dominions and India!" No; the temporary closing of the markets in India and the Dominions owing to financial stringency cut off the chief export market of the British mills, but this was a small matter compared with the falling off in home production due to the increased imports. And it must be borne in mind that this does not apply to newsprint, but to all classes of paper — newsprint, in fact, was worse off than any of the products, because, owing to the depreciated rate of exchange, Germany could buy pulp in Finland at a price which no Britisher could and, with the assistance of cheap labor and a Government subsidy, dump their newsprint in London at a price which no American, let alone a British mill man, could ever dream of. But this is but a minor stage in many of the difficulties some of the English mills had to fight.

Let it be known that there is no country in the world faced with such obstacles and taxation as the British paper industry has to endure in the United Kingdom. Take away the taxation and we would be in a Heavenly land, because we could meet the dumping; take away the dumping and we will fight the other obstacles.

PULP AND PAPER NEWS

Mr. George F. Steele, formerly general manager of the Canadian Export Paper Company, was in Montreal last week.

A pioneer in the manufacture of pulp in Canada in the person of Mr. André S. Delisle died in Montreal on July 27, aged 80 years. He was at one time owner of a small groundwood mill at St. Jérome which was acquired by J. C. Wilson, Montreal, and reconstructed. Mr. Delisle retired from business several years ago.

Mr. T. A. Wark, superintendent of the St. Maurice Paper Company's mill, Cap Madeleine, is reported to have acquired the franchise of the Valleyfield Club of the Eastern Canada baseball League. The game will be played at Cap Madeleine, where the St. Maurice Paper Company owns a fine ground, with stands, etc.

William Bob, employed at the Beaver Wood Fibre Company, Limited at Thorold was almost instantly killed July 24th. He was working at dry end of the machine when he slipped and his right arm was caught in the reels drawing arm and shoulder in and injuring the chest and lungs.

Bob was a Rumanian by birth and had served overseas in the Canadian Forces. He was twenty-six years old and had been with the Beaver Wood Company five years.

The Howard Smith Paper Mills, Limited, are having plans prepared for an extension to the main building of their Cornwall, Canada, plant, to meet the growing requirements of business. The plant now has an output of 60 tons of bleached sulphite pulp per day, and 50 tons of paper. The company manufactures all its raw material. The management reports that the export business of the company is picking up in a most encouraging way, and paper is now being shipped to Australia, New Zealand, South Africa, and Great Britain. The domestic demand is also better.

As a direct result of a short but very violent storm which struck La Tuque about noon on Saturday the 22nd. Mr. Jerry Dion, foreman in the lumber yard, has now passed to his long rest.

It appears that the storm broke down a power line, carrying about 2,300 volts, in the lumber yard, and the unfortunate man, seeing the wire on the ground attempted to move it out of harm's way, with his bare hands, and received the full force of the current, and dropped immediately.

CANADIAN NEWSPRINT TO JAPAN

Tokyo, July 3. —The publishers of some of Japan's largest newspapers, led by M. Ota, vice-president and active director of the Tokyo Hochi Shimbun, have rebelled against the increased price of newsprint in the Japanese market and have begun ordering from Canada a stock which they say is better in quality and lower in price than the native product. Mr. Ota, who succeeded his father in the management of the Hochi Shimbun, for many months has been waging war against the paper barons. Today he said that the prospects for the newspapers winning the contest are good.

Japanese journals use a grade of newsprint inferior to that in general use in the United States so that substitution of a cheaper Japanese stock is impractical. The current quotation on the stock which the Hochi formerly used is 13 sen (6 1-2 cents), and the Canadian mills have underbid this price on better paper laid down in Tokyo.

Initial orders have been received already by the Hochi, the Tokyo Asahai and the Osaka Mainich. —tor and Publisher.

$2,000,000 DAM ON LAKE KENOGAMI

The provincial cabinet will be called upon in the course of the next few weeks to decide upon the construction of a $2,000,000 dam on Lake Kenogami, for the purpose of creating a reservoir. The Quebec Streams Commission has already been approached on the subject and the report is now before Hon. Mr. Mercier, Minister of Lands and Forests, and will be presented by him to his colleagues. Provisions have been made in a recent statute for the expenditure of $1,800,000 on this dam, but the matter was deferred for final decision.

J. E. Dubuc stated that this was the only means of assuring the complete development of that region of the province.

"The parish of St. Cyriac," he said, "situated on the Lake, will have to be wiped out and this will cost in the neighborhood of $600,000.

"It will assure, however, long employment to 1,000 men in the city of Chicoutimi and to another thousand in the same district, who for three months of the year are left unemployed on account of the closing down of some of the mills due to lack of power. It would enormously increase the production of pulp. The dam would give a permanent supply of 70,000 additional horse-power, 35,000 of which would affect the Chicoutimi river and the same quantity the Rivière au Sable."

The present level of the water is eight feet and it would rise to 23 as the result of this construction."

It is reliably stated that the work will be started this fall and completed by September, 1923. The usual guarantees in regard to the revenues of the dam will be given. The industrial enterprises carried on in this territory will all be beneficially affected by this work.

COAL SITUATION BEGINNING TO TIGHTEN

With the strike now three months old, the situation gives indication of tightening, particularly with reference to the anthracite supply for the winter. There is a small, but steady increase in the amount of bituminous coal being mined, but the amount does not equal the normal consumption. The paper industry's dependence upon water for power has relieved the paper manufacturer of some of the anxiety lelt in other industries, but they are paying higher prices for the new coal they are able to secure.

—Bulletin Am. Paper and Pulp Association.

Windsor, July 21 —For a consideration in excess of $2,000,000 the Detroit Journal has sold its title and good will to the Detroit News, according to an announcement made by both papers today. The Journal was founded in 1883, and at the time of the sale was owned by a syndicate of four prominent Detroiters. The last issues were published today. The merger leaves only one morning and two evening papers in Detroit, a city of more than 1,000,000 population.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Product

A-1 Value for Paper Making of the Bark of Baobab. L. MATROD and F. MOREAU. **Rev. Gén. Industrie Textile**, vi. 23-24, 27-28, (1921); **Chem. Abs.**, xvi, 1315, (April 20, 1922). The fibers after energetic carding, with or without retting, yield a material which appears to have a general application in the cordage and textile industries. The examination so far reveals a great amount of tannin in the fiber, ash 13.2%, of which more than half is calcium carbonate, ether extract 0.56%, lignin 35%, cellulose not more than 51.0% with notable amounts of oxycelluloses and methoxycelluloses, which lessen its value as a source of paper. -A.P.-C.

A-1 Value for Paper Making of the bark of Boabab. L. MATROD and F. MOREAU. **Rev. Gén. Industrie Textile**, vi, 37-39, (1921); **Chem, Abs.**, xvi, 1504, (May 10, 1922). The results of an elaborate microchemical examination are reported. The pulp yielded 33% of paper which was rough, very white with a pearly reflection, rather pliable, had no rattle, and had fairly satisfactory tensile, tearing and folding strengths. The fiber is not strong enough for spinning. While pulp from baobab cannot at present prices compete with wood pulp, it may prove a valuable reserve supply. -A.P.-C.

A-15 .Amylocellulose Considered as a Compound of Silicic Acid and Amylose. G. MALFITANO and M. CATOIRE. **Compt. Rend.**, clxxiv, 1128-1130, (1922); **J. Soc. Chem. Ind.**, xli, 429A, (June 15, 1922). Experimental evidence is given in support of the view that amylocellulose is really a complex compound of amylose with silicic acid of the type $(SiO_3(C_6H_{10}O_5)n)H_2$. Other amylaceous materals are similarly thought to be complexes of silicic acid, phosphoric acid, or even water with the group $C_6H_{10}O_5$, and it is considered that this view is better in accord with experimental facts than that which requires varying stages of polymerization and condensation. -A. P. -C.

C. — Wood Preparing and Equipment

C-6 P-1 Guard for Circular Saws. G.E.H.SPILLER Can. Patent 216,987, March 21, 1922; U.S.A. Patent 1,422,316, July 11, 1922. The guard consists of a casing fixed to the saw bench and a drawer sliding in the casing and having two plates in each side, spaced apart in order to leavea gap between the plates. -A.P.-C.

C-8 Chipper. H. E. TIDMARSH and THE UNION IRON WORKS. Can. Patent 219,485, June 6, 1922. The patent covers a device for holding down the bed knife against the bed in its adjusted position, and for taking up wear. It consists of a solid block of cast steel, which fits in an opening formed by cutting away the portion at the foot of the chute directly overlying the adjacent end of the knife, and which rests directly on the latter, so that the pressure exerted through it assists materially in overcoming any tendency of the knife to move out of place. The parts are so constructed as to permit of adjusting the position of the bed knife initially and moving it from time to time to compensate for wear. -A.P.-C.

D. — Groundwood Manufacturing and Equipment

D-4 Wood Pulp Grinder. W. R. TIDMARSH and THE UNION IRON WORKS. Can. Patent 216,895, March 14, 1922. The patent covers a simple and effective device for automatically reversing the flow of water, retracting the pressure foot, and opening the door of each pocket as soon as the pocket becomes empty. -A.P.-C.

D-5 Wood and Like Cellulose Pulp and Fibers. L. ENGE. Eng. Patent 169,802, Nov. 23, 1922. In the preparation of light-colored strong fibrous material for the paper trade from wood or other substances containing cellulose, in logs or billets, the material is saturated, softened, or boiled with water in vacuum or under mechanically produced water, air or steam pressure. Either a high temperature of 105 to 120°C., or a low temperature of about 80°C. and a high pressure of 5 to 10 atmospheres or a low pressure of 350 mm. of mercury can be employed. Neutral, acid, or alkaline reagents may be added to the water. A flowing movement of the liquid used is maintained in the direction parallel to the direction of the fibers of the wood. When treating under vacuum an air pump is used during the whole operation, lasting from six to eight hours, the drop in temperature being made up by indirect heating. -A. P. -C.

E.-Acid Processes of Pulp Manufacture and Equipment.

E-1 Determination of the Chlorine Consumption Number of Sulphite Pulps. RUDOLPH SIEBER. Translation by John L. Parsons in **Pulp and Paper**, xx, 425,-427, (May 25, 1922). See this journal, xx, 438, May 25, 1922. -A.P.-C.

E-2 Manufacture of a Mastic or Binding Material from Sulphite Waste Liquor. E. POLLACSEK. Eng. Patent 157,907, Jan. 10, 1921. A liquid of great adhesive power, and suitable for use in the manufacture of briquettes and the like, is made by neutralizing sulphite waste liquor with slaked lime, evaporating the the liquid after separation of the precipitated sludge, until a sample immediately solidifies on cooling, and then adding to the boiling mass a heavy mineral oil in such quantity that a further sample remains liquid on cooling. -A.P.-C.

E-5 F-5 Preliminary Treatment of the Chips in the Cooking of Wood. E. L. RINMAN. Can. Patent 217,294, March 28, 1922. The chips are treated with hot water or with hot diluted waste liquors at a temperature of 80 to 90°C. so that they become impregnated with a hot neutral liquid. The excess liquid is removed, cooking liquor is added, and cooking carried out as usual. It is claimed that the yield of pulp is increased, and the quality improved, while the total time of treatment is not appreciably lengthened.-A.P.-C.

E-5 F-5 Apparatus for Circulating Liquor in Pulp Digestors. Fr. Patent 533,730 ESCHER WYSS & CO., Dec. 19, 1921. **Papier**, xxv, 160-162, (April 1922). The The digester is equipped with three liquor orifices, one at the top, one about a quarter of the height down, and the third at the bottom, the first and second acting only as inlet and outlet respectively, and being equipped with check valves to this end, while the third can act either as inlet or as outlet, as required. The liquor passes (always in the same direction) through a heater and from there is fed to the digester through piping arranged so that the direction of circulation can be reversed merely by operating a lever, or the like. By thus reversing the circulation, a thorough agitation of the material in the digester can be obtained. -A.P.-C.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-2 Pinabietic Acid, a Resin Acid from Sulphate Black Liquor. OSSIAN ASCHAN and K. E. EKHOLM. **Finska Kem. Medd.**, 1918 pp. 8; **Chem. Soc. Abs.**, cxvi, Pt. 1, 326, (1919). Pinabietic Acid, $C_{20}H_{30}O_2$, shining needles, melting-point 176-178°C, has been isolated from the rosin acids of the black liquor of sulphate mills. -A.P-C.

F-4 Method of Producing Cellulose Fiber. Can. patent No. 212, 034 JUDSON A. DECEW, Montreal, Que., Canada, May 31, 1921. An alkaline solution containing about 15 per cent caustic soda is heated to a pulp cooking temperature, discharged into a digester containing the chips to be acted on, and the excess liquor withdrawn, so that the lignin will be attacked only by the alkali absorbed. -A. P. -C.

F-0 Process for Obtaining Cellulose by Means of Chlorine. H. P. WAENTIG and J. O. W. GIERISCH. Eng. Patent 178,196. In the usual process for obtaining cellulose from raw materials such as wood by treating it with chlorine gas and then with caustic soda liquor, it is found that the chlorine does not always penetrate the raw material, e. g., wood chips, in a single operation. In this process the chlorine is employed under the pressure of liquid chlorine, viz., 6 to 7 atmospheres. The raw material is preferably boiled in a solution of caustic soda of 0.1 to 1% strength, or in milk of lime, which ensures a thorough penetration of the chlorine. If a finely-divided material such as straw is used, the chlorine is liable to cause local overheating. This may be avoided by diluting the chlorine with an indifferent gas such as carbon dioxide, either by mixing the gases beforehand or by using the chlorine and indifferent gas alternately. In treating straw, hydrochloric acid may be used instead of alkali. The material is finally treated with caustic soda liquor of 1% strength at ordinary temperature. The "chlorine cellulose" obtained yields a solution of very high viscosity. -A.P.-C.

F-0 Industrial Preparation of Cellulose by the Chlorine Process. A. CERRUTI. **Giorn. Chim. Ind. Applic.**, iv, 64-65, (1922); **J. Soc. Chem. Ind.**, xli, 366A, (May 31, 1922). The results of the author's experience of the application of the chlorine process to poplar wood differ in some respects from those published by Pomilio (See this journal, xx, 375, May 4, 1922). The chlorine was used wet as it leaves the cell, and the process comprised the three operations: treatment of the wood with alkali by imbibition in an autoclave, subjection of the treated fiber to the action of chlorine, and washing the chlorinated wood with alkaline solution. The minimum amount of chlorine and caustic soda necessary to obtain 100 kilos of dry commercial cellulose were respectively 45 and 9 kilos, as compared with 28 and 5 kilos respectively given by Pomilio; the amount of fuel consumed is 15 kilios, as stated by Pomilio. The technical difficulties of the process are referred to briefly. -A.P.-C.

G. — Pulp Treatment and Drying — Operation and Equipment

G.-8 Wet Machine. H. E. TIDMARSH and THE UNION IRON WORKS. U.S.A. Patent 1,387,954, Aug. 16, 1921; Can. Patent 219,484, June 6, 1922. Also, **Paper Mill, xlv**, No. 23, 4, (June 17, 1922). The cylinder mold is constructed with rods of relatively large cross section spaced apart a distance equal to the length of sheets into which the web is to be broken. These rods cause the web to be weakened along the lines where they occur. The web formed on the cylinder mold in the usual manner is conveyed by a felt between wringer rolls and thence between two sets of press rolls, between each set of which it is subjected to heavy pressure. The felt passes only through the first set of press rolls. The second set of press rolls is so constructed that the web is positively drawn in, and is subjected to sufficient tension to break it along the transverse lines of weakness. Beyond these rolls are a pair of diverging offbearing belts which exert sufficient transverse pull on every sheet to break it along the longitudinal lines of weakness. -A.P.-C.

G-12 Molding of Chemical Wood Pulp with Suggestions as to Control. R. J. BLAIR, Pathologist, Forest Products Laboratories of Canada. **Pulp and Paper**, xx, 429-431, (May 25, 1922). Owing to the presence of large numbers of spores in the atmosphere, practically all pulp as manufactured is well infected before being made into paper, unless run direct to the paper machine. In order to develop properly, the molds must have (1) food, (2) air, a suitable degree of warmth and (4) moisture. (1) The pulp may be protected by "poisoning" it with a suitable antiseptic, sodium fluoride having proved successful in the course of experiments carried out on groundwood. (2) The pulp could be protected by storing in a warehouse where the air had been replaced by carbon dioxide, nitrogen, or some other gas than oxygen. (3) Practically no growth takes place below 35°F. nor above 110 dg. Control of temperature to protect pulp would most easily be applied by the use of cold storage. In winter, open storage is better than storage in a heated building. (4) The easiest way of preventing development of the spores is to deprive them of moisture by drying the pulp. High grade pulp should never be left in wet laps if it has to be stored for any length of time. Microphotographs of infected pulp are given. -A.P.-C.

K. — Paper Manufacturing and Equipment

K-4 Interchangeable Factors in Esparto Boiling. ALFRED W. SMITH. **Paper Making**, xl, No. 11, (Nov. 1921). Paper read at the Edinburgh meeting of the Technical Section of the Paper Makers' Association of Great Britain and Ireland. -A. C.

K-4 Process for the Treatment of Esparto. Fr. patent No. 515, 501, DIMITRY CHOUCHAK, Algeria, Nov. 26, 1920. **Papier**, xxiv, 213-214, (May 1921); **Papeterie**, xliii, 405-407, (May 10, 1921). The grass is cleaned in the usual manner and crushed to facilitate penetration by the liquor. It is treated cold with very dilute acid and then with very dilute alkali, both the acid and the alkaline solutions containing a suitable amount (0.01-2 per cent.) of a catalyst (sodium thiosulphate, stannous chloride, sodium sulphite, sulphonic acids and their salts, aniline, etc.), thus eliminating the greater part of the incrustants. The material is drained then steeped ed for a few minutes in a liquor containing 2.5 to 3 per cent. of caustic soda, and a suitable amount of the catalyst previously used. The fibers absorb about 5 to 7 per cent. of their weight of caustic soda; but do not absorb the catalyst, and on draining away the liquor the latter need only be fortified with caustic soda before reusing. The fibrous material is heated by steam (directly or indirectly) for 20 to 30 minutes at 140°C, defibered, and washed. The caustic soda and fuel consumption are very greatly reduced, and also the first cost of the

(Continued on page 658)

GUMMED PAPER MEN ANGRY

This statement by Charles H. Crowell, President of the Gummed Paper Manufacturers' Association, is in answer to what the gummed paper manufacturers consider a libelous attack on gummed tape in the May issue of Cord Age, of New York. Otherwise it is self-explanatory.

Warren B. Bullock
Director, Information Service, American Pulp and paper Association

Reply of Gummed Paper Manufacturers Association To the Article of Clifford B. Gratz of the American Mgf., Co., Brooklyn, N. Y, Which Appeared in the May, 1922 issue of "Cord Age"

The foregoing article by Mr. Gratz contains misrepresentations of fact, misleading and false statements, and by innuendo and inference is a libel against the gummed paper manufacturing industry.

A direct charge is made in that article that "Statistics of railway and express companies show staggering losses as a result of sealing packages with gum tape" and the author would have the unthinking reader infer that the loss which he claims was suffered by the carriers in 1921 on account of goods lost, stolen or damaged in transit, which loss he fixes at $125,000,000, is attributable solely to the use of gummed sealing tape, which is claimed to be an imperfect sealing medium. He argues that the substitution of his own product, twine, would elliminate the whole or a greater part of this loss.

While no blame can be attached to any manufacturer for advertising his own wares, we do protest emphatically against the adoption of such unfair methods as are employed in this case in libelling the products of a competitive industry. In the cause of fair play, in the interest of the public, and shippers in particular, we issue the following challenge:

1. That the American Manufacturing Company, through its agent, Mr. Gratz, forthwith adduce proof of each and every statement contained in this article, which attacks the efficiency and adaptability of gummed tape as a sealing medium, giving names dates, figures and facts.

2. That Mr. Gratz publicly announce the name of each railroad and express company which has suffered "staggering losses as a result of sealing packages with gummed tape" and at the same time produce the alleged "statistics" on which the article is based and which support his statement that the $125,000,000 loss was suffered by carriers in 1921, as a result of the use of gummed tape by shippers.

3. That "Cord Age" publicly announce whether this article is a paid advertisement or a contribution requested by it, and in the latter event, that this publication disclaim responsibility for the truth of the statements contained in the article, or assume responsibility therefor.

Failure to answer this challenge will result in a consideration by the Gummed Paper Manufacturers' Association of the advisability of submitting to the courts the question of the responsibility of these parties for the dissemination of these libelous and false charges which have resulted in grave financial loss to this industry.

Charles H. Crowell, President,
Gummed Paper Manufacturers' Association

HEAVY CONSUMPTION FORCING 4C PAPER

Increased consumption of newsprint is already showing its reflex in the newsprint market. Spot paper is fairly scarce and mills with a supply for immediate shipment were the week of July 24 quoting the paperbrokers a price of 3.75 cents a hundred pounds, f. o. b. net to the broker, without allowance for the broker's commission. This rise in the spot market has been accompanied by the International Paper Company's announcement that its price for new orders is $3.75, but as yet the price on newsprint from northern European mills has not been affected. This paper still is being offered at 3. 65 on the pier. New York delivery within about eight weeks. If conditions continue as they are now 4-cent paper is considered certain in the fall.

Newspaper executives in New York are much interested in the nation-wide increase of consumption of newsprint because they believe that it is directly caused by an increase of reading matter and pictures and an increase of distribution.

One executive considers that about two thirds of the increased consumption of newsprint has been due to the increased amount of pictures and reading matter in the newspapers of the country and that the rest is the result of the greater number of copies being printed. Net paid circulation increase for this period has been practically negligible. All of which, summed up, means that newspapers are using more newsprint to give their readers larger papers, which are pictorially and otherwise more interesting, to promote and hold the circulation they have.

In 1878 there were twenty-three technical journals published in Canada and United States; in 1900 the number was 800, and to-day there are between 1,300 and 1,400 devoted to the interests of about a thousand industries. Editor and Publisher.

NEWSPAPER CASUALITIES

Commenting on the passing out of 39 newspapers in Canada through suspensions and amalgamations, the Toronto Star remarks:

One wonders what the effect will be. In many centres two-sided discussion of issues ceases; this at a stage when political and national issues are much in the melting pot, and the voter must often be at a loss to reach a verdict. However, there are compensations. There is the compensation of decreasing partisnship (largely due to amalgamations) and a fairer presentation of issues both in the news and editorial columns; and there may be the compensation of voters learning to think more for themselves, thus discarling the traditional shibboleths, which helped nobody but a few politicians.

TO DOUBLE CAPACITY

Port Arthur, July 24. — Doubling the capacity of their ground pulp mill from thirty tons daily to sixty tons; building and equipping a newsprint mill with a daily capacity of fifty tons, at an estimated cost of $1,000,000; the purchase of considerable additional electrical energy; the employment of approximately 175 men in the mills and 100 in the woods, are some of the items to be undertaken, it is said to-day, by the Consolidated Water Power and Paper Company of Wisconsin, in connection with the Kaministiquia Pulp Mill in Port Arthur, purchased recently by that company.

UNITED STATES NOTES

Philip T. Dodge, president of the International Paper Company, has sailed for Europe for a tour of inspection through leading paper making centres abroad. He is being accompanied on the trip by Allen Curtis, vice-president of the company and manager of the Department of Manufactures. Messrs. Dodge and Curtis will remain abroad about two months studying industrial conditions, particularly as they affect paper manufacturing.

The Paper House of Pennsylvania is this week issuing the first number of its new house organ, styled *The Bulletin.* The leading article in the initial issue presents a word and picture story of the establishment and growth of the Strathmore Paper Company, for which the Paper House is one of the five Philadelphia distributors.

A seaplane, flying from Ketchikan as a base, will be employed by the Forestry Service, in the mapping of certain regions in the national forests of Alaska which are said to contain numerous unknown and uncharted lakes. It has long been known that there are many lakes on the headlands and islands traversed by the inside passage between Seattle and Skagway that do not appear on any map. In the New York-Nome flight made by Army aviators lakes were frequently sighted which could not be found on the latest and most authentic maps of this territory. Tales of unknown bodies of water are constantly being brought in by trappers and prospectors. Less than a year ago a lake four and a half miles long and a half a mile wide was discovered at the head of Short Bay. Recognizing that many others of these "lost lakes" may be sources of valuable water power, the Forest Service has laid plans to map this no man's land of the North by means of aerial photographs. A few days' flight, it is said, will be sufficient to cover the area with a degree of accuracy that would require many years and great expense to accomplish by ordinary methods.

The paper and allied industries will be among the leading activities represented in a library of industry that is being installed in the Hotel McAlpin, New York City. Business men and national leaders are aiding in the selection of the volumes that are to be contained in this representative business library. The collection is to include the ten most authoritative books on every branch of business and industry. The bibliography will be made available to chambers of commerce and other business organizations which desire to avail themselves of the result of the survey.

The investigation of the Customs Service of the Treasury Department into charges that there has been "dumping" of paper material and products into the United States from European countries and Canada has resulted in a negative finding. A preliminary announcement just given out states that "there is no 'dumping' on either newsprint paper, pulp nor kraft paper from Germany or the Scandinavian countries, nor is their any dumping of either pulp or kraft from Canada." This leaves the Customs officials with only one paper case pending and that is as to whether or not there is dumping of newsprint from Canada.

The Bureau of Domestic and Foreign Commerce of the Department of Commerce has received from a consular agent in Japan the following summary of the Japanese pulp industry: In 1921 there were 13 Japanese companies, with 28 mills, engaged in the pulp industry, as compared with 17 companies and 31 mills in 1920. The total output of pulp amounted to 268,261 tons in 1920 and 250,027 tons in 1921. This decrease was ascribed to the financial depression in Japan last year. The 1922 output is expected to be 30 per cent. greater than that of 1920, and in the near future, the Japanese production of pulp will probably exceed 400,000 tons annually.

Forty students and an equal number of post graduates attended the third annual salesman's camp and school of the S. D. Warren Company which was held at Westbrook, Me., during the latter half of the week of July 17. The salesmen in attendance came from all parts of the country. It was the prevailing opinion at the close of the sessions that the gathering had been a pronounced success. The program consisted of intensive study of the production and sale of Warren Standard papers, with discussions and practical demonstrations at the plant. Mr. Joseph A. Warren, mill manager, supplemented his address of welcome at the opening session with a talk on the subject: "Why Standardization?" Addresses along similar lines were given by other mill officials and discussions relating to salemanship were led by prominent members of the sales organization. The business end of the get-to-gether was followed by tennis and other out-door recreations, and an auto trip to Pine Point afforded the party the chance to get in some surf bathing topped off by a hearty shore dinner.

According to estimates made by former Forest Commissioner Colby, the forests of Maine are in danger of early exhaustion unless new growth is made to catch up with the amount of harvesting done each year. He estimates that the annual cut of timber for the past decade in the State has been about a billion feet, and that the annual growth is not more than one-tenth of this amount. This view of Mr. Colby, however—regardless of the fact that he is considered one of the best informed men in Maine on the subject—is not held by many of the Pine Tree State's practical timber men. It is the general belief among such that the growth each year is more than one-tenth of the annual cut, and that the forests of Maine will continue to serve the people for more than forty years to come.

A further sign that things in the paper industry have begun to pick up in a decided manner may be indicated in the announcement of the Keyes Fibre Co., Waterville, Me., that the female employes in its factory have received an increase in wages. It has been some months since these columns carried reports of wage increases. The prevailing wage of the Keyes employes affected has been increased 10 per cent for day work and about 25 per cent for night work. The company manufactures *paprus* pie plates. Its output is increasing and its business is prospering. Revived business and prosperity may before long lead to similar action in other parts of the country. A rise in wages all the way up to 15 p. c. has been noted in most of the leading industries recently surveyed by the New York State Industrial Commission. For the present the paper industry is not included among those in which wages have taken even a small climb. It is one of two that have shown slight reductions during the month of June. In all other lines there has been a slight trend upward in the wage scale, due, undoubtedly to signs of revived business.

plant. The catalysts may also be used in the so-called English process, thereby effecting appreciable reduction in the time required for the treatment and in the fuel consumption, but the economies are not as great as in the process outlined above. The function of the catalyst is twofold: (1) it increases the rate of reaction; (2) it prevents the partial destruction of the cellulose. -A. P. -C.

K-7 Use of Mixing Tanks in Place of Beaters. Paper Making, xl, 336, (Nov. 1921). A discussion of the tendency in modern mills to use a mixing tank instead of beaters and a description of the form of mixing tank used at the Camas mill and also of the one at the West Linn mill, in Oregon. -A. C.

K-8 K-12 Machine for Coloring and Drying Paper. Fr. Patent 535,637, J. M. LHERITIER, Jan. 27, 1922. **Papeterie**, lxiv, 454, (May 25, 1922); **Papier**, xxv, 203-205, (May 1922. The paper is colored in the web by passing through a bath containing the coloring solution, and is then dried by means of a gas flame, calendered, and reeled. -A.P.-C.

K-10 K-23 Sizing and Impregnating Paper, Cardboard, Woven Fabrics, Etc. A. LUTZ. Eng. Patent 156,514, Jan. 5, 1921. Animal size or casein used for sizing and impregnating paper, cardboard, fabrics, etc., is hardened by treating it, either before or after the impregnating operation, with 2% (on the weight of dry size) of "methyloformamide", $H.CO.NH.CH_2OH$. When used in large quantities, e.g., 20% on the weight of paper or fabric treated, "methyloformamide, by virtue of its hygroscopic properties, imparts a flexible, leather-like character to the material. -A.P.-C.

K-10 The Preparation of Aluminium Compounds for Sizing Paper. Fr. patent No. 515, 314, GEORGE MUTH, Germany, and LOUIS DUVINAGE, Belgium, Nov. 24, 1920. **Papier**, xxiv, 212-213, (May 1921); **Monit. Papeterie Francaise**, lii, 325-6, (June 1, 1921). The bauxite, or other aluminiferous material, is boiled with sulphuric acid or sodium bisulphate in open vessels, without preliminary calcination, in the presence of a small amount of a fluorine compound (sodium or calcium fluoride, cryolite, etc.) which gives off hydrofluoric acid when treated with sulphuric acid. -A. P. -C.

K-12 Attachment for Paper Machine Dryers. J. W. SMITH, Can. Patent 217,300, March 28, 1922. The patent covers a device for isolating the condensed water outlet from the steam inlet so as to prevent equalization of the pressure. It consists essentially of a sleeve adapted to be secured to the dryer at the steam inlet and to rotate with the dryer, a fixed fitting having a steam inlet and a steam chamber, a stuffing box on the fixed fitting back of the steam chamber, and a moisture return pipe extending through the sleeve, the steam chamber, and the stuffing box.-A.P.-C.

K-12 Developments in High Speed Machines. Paper, xxx, No. 12, 7-10, (May 24, 1922). An account of the discussion following the reading of T. D. Nuttall's paper on recent developments in paper making touching on control of machine wire, use of ball bearings for table rolls, arrangement of the suction boxes and its effect on the wire, suction couch rolls, balancing the table rolls at high speeds, relation of speed and hydraulic head, effect of quality of groundwood and variations in consistency in the manufacture of news print at high speeds. -A.P.-C.

K-12 Cleansing Paper Machine Felts Br. patents No. 167,929, 167,930, J. T. Ayers, Lachute, Que., Canada. **Paper Making**, xl, 313, (Oct. 1921). **No. 167,929.** The felt is passed in contact with a napping device which tears off particles of the foreign matter adhering to the surface. The back of the felt is then sprayed at high pressure, while the ace is passed before a suction box which collects the cleaning liquid and any remaining foreign matter which may have been left after the napping process.

No. 167,930, covers the machine for carrying out the process. -A.C.

K-14 Process and Apparatus for Watermarking or Embossing Paper. Fr. patent No. 514, 084, CHAS. H. F. SMITH, Canada. **Monit. Papeterie Francaise**, lii, 257-258, (May 1, 1921). A. P. -C.

K-19 Improved Process for Glue or Gelatine Sizing. Fr. Patent 534,434, EXPORTINGENIEURE FUR PAPIER UND ZELLSTOFFTECHNIK, Jan. 5, 1922. **Papier**, xxv, 163, (April 1922). (Same as Ger. Patent 291,228, (July 3, 1915.) An addition of 2% of caustic soda (on the weigth of the solution) or of lactic acid (up to 30% on the weight of the dry glue) is made to the glue solution to increase its penetrative power. -A.P.-C.

K-21 Machine for Cutting Roofing Paper. ROOFING PATENTS CO., assignee of A. S. SPEER. Can. Patent 216,8700, March 14, 1922. The patent covers a machine for dividing a web of prepared roofing into separate elements or "shingles" of special shape (covered by U. S. Patent 1,172,068, Feb. 2, 1916), so that there will be a series of slotted openings in the weather, or exposed, portion of each row or layer of the shingles when laid upon the roof, without the openings being continued through the lapped or covered portion of the layer. A.P.-C.

K-23 Notes on Blotting Paper and its Manufacture. Papeterie, xliv, 98-101, (Feb. 10, 1922); 146-154, (Feb. 25, 1922); 393-400, (May 10, 1922). The author discusses the qualities required of blotting paper, and gives numerous practical hints as to the best conditions of working for obtaining most satisfactory results. -A.P.-C.

K-23 Improvement to Paper Creping Machines. Fr. Patent No. 515, 168, W. WM. COLLEY, England. **Monit. Papeterie Francaise**, lii, 288-289, (May 15, 1921). -A. P. -C.

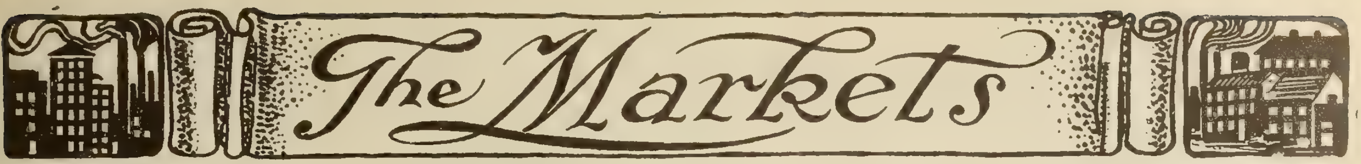
K-23 Metal Coated Paper. Fr. Patent 533,710, M. HOCHSTADER, Dec. 19, 1921. **Papier**, xxv, 159-160, (April 1922). The metal coated paper used in the manufacture of electric cables must possess the following properties: (1) Coherence of the metal coating; (2) adherence of the metal to the paper, which must not be impaired by the impregnation of the cable nor by the mechanical treatment to which the paper is subjected during the process of manufacture of the cables; (3) a sufficient electric conductivity; (4) a sufficient thermal conductivity; (5) porosity so as to allow the impregnating fluid to pass through notwithstanding the metal coating; (6) minimum thickness of the metal coating. This is obtained, according to the patent, by spraying the metal on to the paper in known manner, passing it through smoothing rolls and through perforating rolls so adjusted as to perforate only the metal coating without impairing the texture of the paper. -A.P.-C.

L. — Articles Produced from Pulp and Paper

L.-4 Improved Folding Carboard Box. Fr. Patent 533,755, CARTONNERIES D'ANJOU. Dec. 20, 1921. **Papier**, xxv, 162-163, (April 1922). -A.P.-C.

L.-4 Machine for the Manufacture of Foldable Sanitary Paper Cups. J. V. WECKBAUGH, Can. Patents 217,171 and 217,172, March 21, 1922. -A.P.-C.

L-5 Manufacture of Wood Alcohol from Sawdust. Can. patent No. 212, 058, LEE F. HAWLEY, Madison, Wis., U. S. A., May 31, 1921. -A. P. -C.



The Markets

CANADIAN TRADE CONDITIONS

Montreal, August 1. — The pronounced activity in boards is the feature of the pulp and paper markets. Business during the early months of the year was better than in 1921, but it was not brisk. Then it began to brighten up, with later a very strong demand, which came in with a rush. The case of the Canadian Paper Board Company, Limited, may be cited as an illustration of the turn in the market. During July the mills of the company worked day and night, the production of that month — usually a quiet period — constituting a record. What is the reason for this accession of business to all mills manufacturing boards? The industry is one which depends entirely upon the condition of general trade, and it is evident that the large orders for boards are in response to a more active movement in business.

As regards local conditions, jobbers state that there is little doing, and that the orders are by no means of a satisfying character in the direction of size. The fact is, trade is of a more or less spasmodic nature, and that while one week is good another is—well, indifferent.

British firms are making a stronger bid for Canadian trade, as evidenced by the increase in the number of representatives calling on paper houses.

There is no material alteration in the newsprint position. The price has advanced for the small amount of spot stock available. As far as one can see, there is not likely to be any change in the situation until after the end of the year, and then the question of price will be judged on prevailing conditions. In the meantime all the mills are producing at top speed.

Nearly all other sections of the paper trade report a moderate trade, although in book papers the orders are stated to be very substantial.

The call for groundwood has increased, and what is still more satisfactory, the price has slightly hardened. This department has long been very dull, but with more activity in certain directions we may look for the greater demand being sustained. Bleached sulphite is being bought freely, at unchanged prices.

In pulpwood, quotations are still very low, and two or three American companies have recently made considerable purchases at the reduced rates.

Toronto Topics

Reports from large retailers are to the effect, as one man put it, that "The public is standing by business very well." Mail order business is increasing in volume and indicates the well warranted optimism permeating the long settled, level-headed farming communities of Ontario. These are never carried away by excessive optimism as is expressed pretty well in the observation frequently heard round here, that it "never is a good year for peaches."

Wholesalers are quiet but are not concerned deeply because of the seasonal conditions and the lull that usually precedes the Canadian National Exhibition, upon which the activity of this part of Ontario is annually focussed.

With reference to coal and transportation the attitude is largely assumed that the leaders of both sides are thoroughly seized of the consequences attendant upon prolonged industrial warfare, and are likely to come to terms as soon as either has obtained the maximum concessions deemed possible without precipitating disaster. This is a risky game in view of the possibility of hot heads taking too high ground and refusing to compromise. The feeling here is that settlement will be reached in time to prevent any serious freeze up of the stream of industrial progress which has been gathering a heartening volume in the last six months.

Market Notes

Pulp markets are steady and inclined to be firmer. Prices unchanged.

Groundwood $30 to $40 delivered.

Sulphite. News grade around $60.00, and book around $65 delivered. Bleached $80.00 to $90.00.

Sulphate. $70.00 delivered, market for sulphate and kraft inclined to be quiet.

Writing and Book. Market is fairly quiet.

Wrappings. Steady. No. 1 Kraft M.F. $8.00 M.G. $8.15. Colored Sulphite $8.00. Colored Kraft 9¾c. to 10¾c. B. Manila $5.50. No. 1 Manila $7.25. Fibre Manila $7.25.

Bags.—Light Manila 62 p.c. 7½ p.c. off 100 M lots. Heavy Manila 60 p.c. off 100 M. lots. Light Kraft 60 p.c. off 100 M. lots. Heavy Kraft 50 p.c. 10 p.c. off 100 M. lots. White Confect. 17½ p.c., 10 p.c. off 100 M lots.

Tissues show marked activity.

No. 1 Manila, 20 x 30., 80c. 24 x 36 $1.05.

Cap tissue, 10 lbs., 20 x 30, 90c. 24 x 36 $1.25.

No. 1 White, 20 x 30, $1.10, 24 x 36 $1.55.

Towels.—Car lots.

Interfolding, per case, $5.63 net.

Bleached White, rolls of 150 towels (50 rolls to case) $22.00, less 22 per cent.

Natural, rolls of 150 towels (50 rolls to case) $19.00 less 22 per cent.

No. 3, towels, rolls of 150 towels (50 rolls to case), $13.75, less 22 per cent.

Toilets—Car lots. List Price, less 20 p.c. and 25 p.c.

Paper Stock.		
No. 1 Hard White Shavings	$3.75	
No. 1 Soft White Shavings	3.25	3.35
Heavy Books and Magazines	1.70	
Ledgers and Writings	1.95	
No. 1 Kraft	2.00	2.25
Newspapers	.80	
No. 1 Mixed Papers	.60	
No. 1 Miscellaneous	.55	
No. 2 Miscellaneous	.60	
Cotton Rags No. 1 White	4.50	
Thirds and Blues (repacked)	2.00	
Roofing Rags	1.15	
New Cotton Cuttings.		
Fancy Shirt Cuttings	5.25	5.50
No. 1 White Shirt Cuttings	10.50	11.00
Canton Flannels Bleached	7.50	8.00
White Lawns	7.50	
Blue Overall Cuttings	5.50	
Ropes and Bagging.		
No. 1 Scrap Bagging	18.00	
Mixed Strings	15.00	
No. 1 Manila Rope	5.50	5.75

Youth views life through rose-tinted glasses. Age through blue goggles. Which is better?

NEW YORK MARKETS

New York, July 29 — (Special Correspondence)— The paper market continues fairly active and there is a firm undertone apparent in various corners of the trade. Reports generally tell of business running considerably better than normal for this time of the year. In other words, it is commonly believed that the demand for paper of most kinds which is proving exceptionally good for midsummer is nothing else than delayed demand which in more normal times would have developed during the first few months of the year, but which, because of matters affecting the various consuming markets earlier this year, has been delayed until the present.

There is a very optimistic feeling permeating the trade. Nearly everyone anticipates brisk business and most favorable market conditions during the approaching fall. Figures that are issued almost every day concerning activities in the various industries in the United States show most conclusively that manufacturing and commercial activity is once again getting back to where it should be; that the public is again purchasing in a way which spells good times; that exports of American products are on the rise, and that the general business situation is undergoing constant and healthy improvement. Evidences are apparent on every hand that consumption of paper is mounting, and this is of course being reflected in a greater demand for paper, with the result jobbers are kept busier and manufacturers are finding it necessary to increase mill operation.

Paper prices seem, in a great many instances, ready to advance at a moment's notice. An exceedingly firm tone characterizes quotations on most kinds of paper. The rise in newsprint on July 1 has had a strengthening effect on nearly all other kinds of paper, and while no actual advances of note have as yet been recorded, prices are in a position where all that is needed to send them higher is for demand to expand just a trifle more. Mills are no longer cutting prices to land orders; instead the attitude displayed by most manufacturers is that of "take it or leave it," in other words buyers find it imperative to meet the prices quoted or go without paper. On some descriptions of paper, specialties in particular, the upward trend has carried prices at least slightly higher, and a consensus of opinion in the trade is that the basic grades will undergo considerable advancement before the present year is out, especially if demand broadens to the extent that it is expected to during the fall.

The latest report of the Federal Trade Commission shows that production of print paper is keeping up at a remarkably good rate. United States mills produced only slightly less print paper in June than in May, a total of 127,230 net tons being produced last month, compared with 129,950 tons in the preceding month, 86,770 tons in June a year ago, 130,380 tons in June, 1920; 114,896 tons in June, 1919, and an average monthly output based on reports covering the past five years of 114,440 net tons. Of the 127,230 net tons of total print paper produced in June, 1922, 117,473 tons were standard news, compared with 120,654 tons produced in May of this year, and an average monthly output for the past five years of 103,688 tons. It will be seen from these figures that print paper production is running far above an average, despite which mill stocks are gradually declining, stocks in June dropping from 24,781 net tons of total newsprint at the beginning of that month to 23,367 tons at the end of June, thus showing that manufacturers are shipping out all of their tonnage as quickly as it is manufactured as well as a part of their surplus holdings.

No less an authority that Philip T. Dodge, president of the International Paper Company, predicts further advancement in newsprint prices. In an interview this week Mr. Dodge stated that he expects prices on print paper to go higher before the current year closes, and gave as his reasons the high cost of manufacture and the rising cost of raw materials, as well as the law of supply and demand.

Box boards have strengthened further in price. Under the stimulation of a steadily increasing demand from consumers, board manufacturers in a good many cases have marked up quotations to a minimum of $42.50 a ton f.o.b. New York on plain chip, and $45 on news board, with some mills naming even higher prices than these. Boxmakers are buying board in generous quantities and mills are busy turning out sufficient board to meet the demand. Prospects are for a very favorable market for the next several months, August and September usually proving the liveliest months for board manufacturers, and predictions are made that board prices will go to $50 a ton for chip.

Book papers are coming along and are gradually working into a better market position. Consumption of book paper is slowly though consistently growing, and mills are finding a broader outlet for their product. Prices are unchanged but exhibit a stiffening tendency.

GROUND WOOD. — Reports generally tell of a good demand for mechanical pulp. Newsprint mills are absorbing tonnage in a steady manner, and there is a very satisfactory call for supplies from board manufacturers and other consuming sources. Stocks of ground wood appear to be ample to fill present requirements, if not a little in excess of consumers' needs at the moment, but no one is pressing pulp onto the market and quotations are well maintained. A fairly large transaction was reported here this week involving ground wood made in Nova Scotia to be brought down to Philadelphia and sold at $33 per ton on the dock at that port, the tonnage to be shipped over the next few months. Domestic grinders quote around $30 a ton f.o.b. pulp mills for spruce ground wood for prompt shipment, while about the lowest reported named by Canadian grinders is $26 a ton at producing plants.

CHEMICAL PULP. — Demand for chemical pulp is holding up at a pace which is rather exceptional for just this time of the year. Papermakers are buying freely, and, from all accounts, are absorbing pulp because they are in direct need of it, it being stated that little or no speculative buying is being engaged in. Quotations are marked by a steadier tone than in a long time, and those on the selling side of the trade assert that prices will certainly rise during the fall though these same traders are frank to say they do not expect any material change in market levels until along about September 1.

Kraft pulp has firmed after having experienced a dip in price, and most importers now quote at least 2.50 cents a pound for No. 1 Scandinavian kraft ex dock New York, whereas a few days ago sales down to 2.25 cents were recorded. Bleached sulphite is moving in very gratifying volume and at steady prices, domestic producers quoting around 4.25 cents a pound for No. 1 bleached, and importers about 4 cents. Prices on unbleached sulphite are firm at a range of 2.50 to 2.75 cents per pound for No. 1 quality, while soda pulp is bringing 3.50 to 3.75 cents a pound.

RAGS.—Active demand for roofing stock and strength in prices on this class of material is easily the feature of the papermaking rag market. Felt mills are paying around 1.30 cents a pound at dealers' shipping points for No. 1 roofing rags, and an average of 1.20 cents for No. 2 packing, and are freely absorbing supplies, especially domestic goods which can be delivered promptly. Other grades of papermaking rags display a firm price tone. New cuttings of most grades are gradually moving to higher quotational levels under a good demand from consumers, and No. 1 white shirt cuttings are now quoted by most dealers at 11.50 cents a pound f.o.b. shipping points. Old whites are steady and readily inquired for, and thirds and blues and twos and blues are being accorded more attention by mills.

PAPER STOCK. — Low grades of old paper chiefly used by board mills are in proportionately better call than high qualities. No. 1 mixed paper has moved freely this week at advancing prices, sales at levels netting New York dealers very close to 65 cents a hundred pounds f.o.b. this city having been reported. Folded newspapers are in fair demand at about 70 cents at dealers' shipping points, and container manilas, city mixed paper and similar low grades have found a ready sale. Shavings evince little change. Soft white shavings are wanted in moderate amounts by mills at prices raging around 3.50 cents per pound f.o.b. New York for No. 1 grade, and while hard white shavings are largely neglected by buyers, dealers ask 3.75 to 4 cents a pound. Old magazines hold firm in price at 1.75 to 1.80 cents a pound at shipping points, and ledger stock is selling at 1.85 to 1.90 cents.

OLD ROPE AND BAGGING. — There has been no perceptible slowing down of demand for old manila rope, and quotations are steady at 6 to 6.25 cents per pound at dealers' shipping points, with most sellers asking the higher figure. Old bagging is in fair call at unchanged prices, No. 1 scrap bringing about 1.15 cents a pound, on the average, and roofing bagging 85 cents a hundred pounds.

A NEW TYPE OF CRANE

The Link Belt Company of Chicago has recently perfected a crane which they call a "crawler crane." As its name implies, this machine is self transporting. It is supported on two wide caterpillars running full length of the operating platform. The platform carries the operating mechanism which consists of winding drums for boom raising cables and hoisting cables together with the motive power for drawing these, for the turning platform and for drawing the caterpillars.

In order to permit the safe lifting and swinging of ten tons at twelve foot radius, or three tons at thirty foot radius, it has a counterpoise. The whole machine is gasoline driven which makes itself contained, and it can be operated anywhere and any time.

THE PLUS MAN

It's the work you do for which you receive no pay that earns promotion. Just as the reserve power sells a motor, or the extra stretch of sail wins a race, or the second wind makes the athlete, so the person who gives just a bit more than is actually required earns promotion. Good work may attract attention but the reserve, the after-hour effort, not only receives recognition but deserves promotion.

No man climbs to the ladder top on an eight-hour schedule. The first man out the gate may be a good workman but we'll wager the last man out of the gate is a better partner in the plant.

The man who gives just the amount of effort he is paid to give is overpaid. Don't lean—support. Give more than is required every day in the year and three hundred and sixty-five times and you will receive more than you give. — Palmtexts.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

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Helsingfors, Finland

OXYGEN PRODUCERS CONSOLIDATE

The consolidation recently of the manufacturing and distributing resources of the Dominion Oxygen Company, Limited, and the National Electro Products, Limited, gives to Canada one of the largest organizations of its kind on the continent. The business is henceforth to be conducted under the name of the Dominion Oxygen Company, Limited, now operating oxygen plants at Montreal and Toronto, and acetylene plants at Merritton, Winnipeg and Shawinigan Falls. In addition the company conducts oxygen and acetylene distributing stations at Hamilton, Windsor and Quebec.

It is claimed that the union of the two companies will be of material advantage to all Canadian oxygen users through stabilization of the product, assurance of steady supply and certain improvements in service facilities will make possible.

It is understood that Mr. W. J. Cluff and associates, of Toronto and Montreal, who founded the National Electro Products, Limited, several years ago, will retain their relationship with the oxygen industry through their interest in the consolidated companies.

A STICKY PAST

The use of adhesives in connection with the manufacture of paper boxes has, in recent years, led to a remarkable variety of adhesives of all kinds being placed upon the market for the use of the paper box, and bag maker. Few realise, perhaps, that the manufacture of glue as an adhesive is many more years older than that of box making, as an industry.

As an adhesive, the use of glue can be traced back as far as the ancient Egyptians, who in the reign of Thotmes or Thutmosis were undoubtedly possessed of a knowledge of the art of veneering; that is to say, of coating a piece of wood with a thin layer of a more valuable material. Those who are interested in the ancients may be aware that in the sculptures of Thebes, a workman is represented engaged in this work of veneering, while another man is seen spreading the glue with a brush. There is also represented a fire upon which is standing a pot for the glue, and what is evidently a piece of glue with its peculiar conchoidal (shell-like) fracture, is shown.

This is, therefore, a certain indication that glue was used by the Egyptians, at any rate, some 3,300 years ago, and in addition to this there are numerous references to glue in the literature of the ancients and the Middle Ages. From this period, however, the use of glue in various industries became more and more pronounced, but it was not until some time in the eleventh century that it seems to have been made use of in the box making industry. There were only three classes of glue in those early days, while in our own time the number of adhesives which are used in many varied kinds of trade, is probably ten times as great, if not more.—The Paper Container.

BATES AND INNES INCREASE SALES FORCE

The trade will be interested to learn of the appointment of Mr. J. D. Volckman as sales representative for Bates and Innes Limited pulp and paper machine press felts for Ontario, Quebec and the Maritime provinces. He is also connected in a sales capacity with Pulp and Paper Mill Accessories, Limited, and will maintain headquarters with that concern at 170 McGill St., Montreal. He will handle a large line of pulp and paper mill accessories and supplies in the way of screens, machine clothing, separators, thickeners, barkers, pumps, knives, etc.

Mr. Volckman is an Englishman by birth and was for ten years connected with Thos. Owen & Company, Limited, paper manufacturers of Cardiff, Wales. He has been in Canada since 1910, and for the past ten years has been with the Kraft Mills at Millerton, N. B., latterly as manager up till the closing of the company. Mr. Volckman's intimate knowledge of pulp and paper mill conditions will be of great value in his new field. He will cover all mills in Eastern Canada for Bates & Innes, Limited.

NEW RUSSIAN PAPER COMBINATION

According to a report from Russia, the General Paper Trust was organized in February of this year. Six factories, with a total pay roll of over 8,000 employees, take part in this combination. The production of these six mills in February was somewhat larger than in January. The production of pulp and paper in January and February was as follows: In January, 226 short tons of ground wood, 1,051 short tons of chemical pulp, and 1,250 short tons of paper; in February, 343 short tons of ground wood, 1,139 short tons of chemical pulp, and 1,305 short tons of paper.—"Commerce Reports."

Harland Engineering Works have four orders in hand for their Patent Interlock Sectional Electric drive; 2 for St. Lawrence Paper Mills, 1 for Belgian Industrial Co., and 1 for Provincial Paper Mills. The last is a book machine, the others for news.

Many a man thinks he is a shining light when he is only a flash in the pan.

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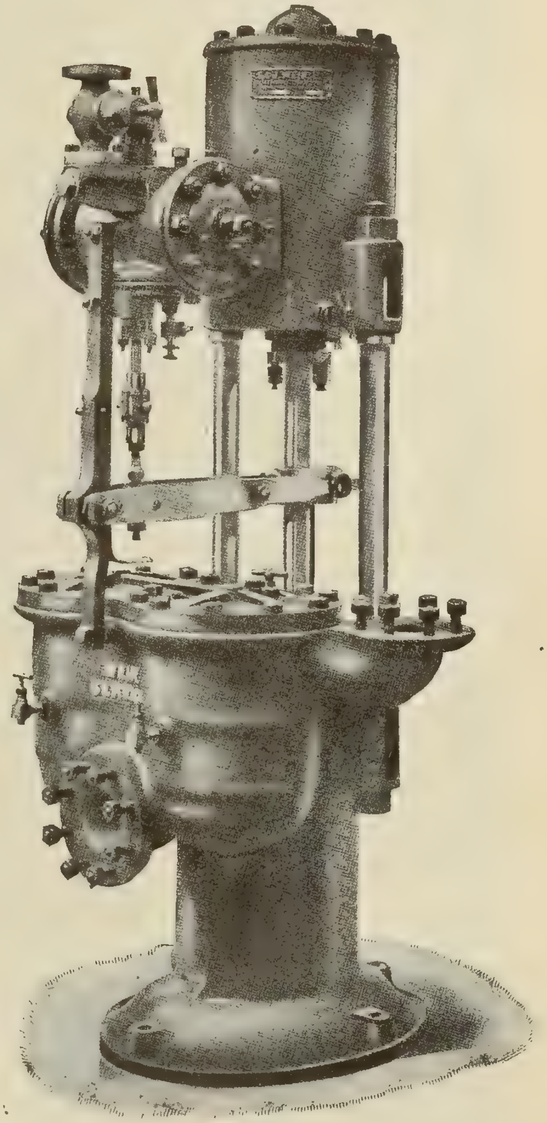

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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Dept., Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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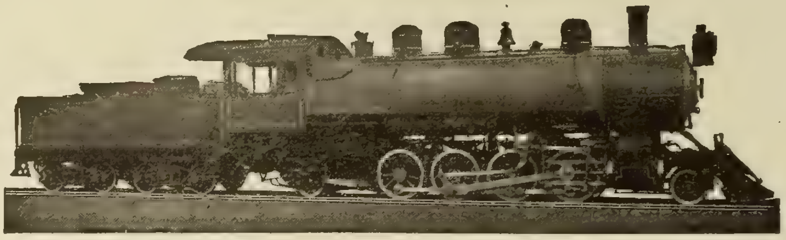

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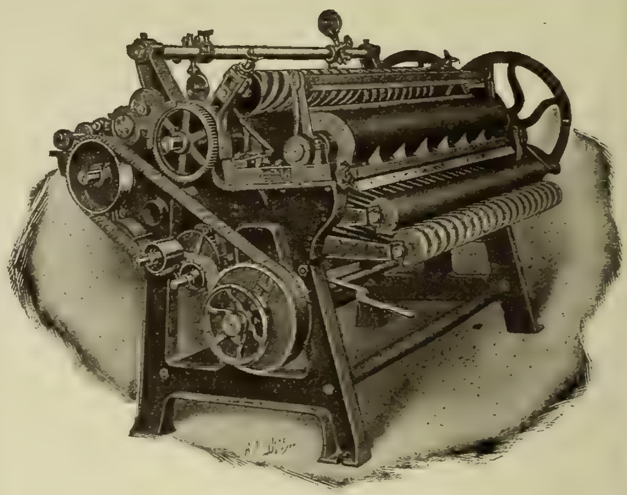

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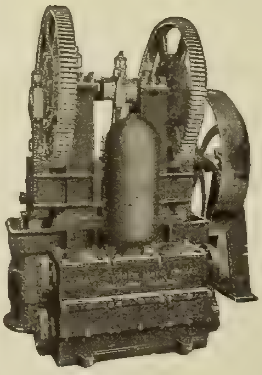

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Reid, C. De Wolf.

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Bates & Innes, Ltd.
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Crane Co., Ltd.

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Waterous Engine Works Co., Ltd

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Furnace Linings:

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Can. Chicago Bridge & Iron Co., Ltd.
Horton Steel Works, Ltd.

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Canadian-Fairbanks-Morse Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Canadian Link-Belt Co., Ltd.
Diamond State Fibre Co. of Can., Ltd
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Smart-Turner Machine Co., Ltd.
Victoria Foundry Limited.
Waterous Engine Works Co., Ltd

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The Harland Engineering Co. of Canada, Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Glassine Calenders:

Norwood Engineering Co.

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Victoria Foundry Co., Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works Co., Ltd.

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Lombard & Co.
Miramichi Quarry Co.
Smallwood Stone Co
Smallwood-Low Stone Co.

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Carthage Machine Co.
Eng. & Machine Works of Can., Ltd
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd
Waterous Engine Works Co., Ltd

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Goldie & McCulloch Co., Ltd.
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Waterous Engine Works Co., Ltd

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Bathurst Lumber Co., Ltd.
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Price Bros & Co., Ltd.

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Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
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Price Bros & Co., Ltd.
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Brompton Pulp & Paper Co., Ltd.
Dryden Pulp & Paper Co., Ltd.

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Interstate Pulp & Paper Co., Inc.
Spanish River Pulp & Paper Mills.

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Acer, J. H. A. & Co., Ltd.
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Lagerloef Trading Co., Inc.
Laurentide Co., Ltd.
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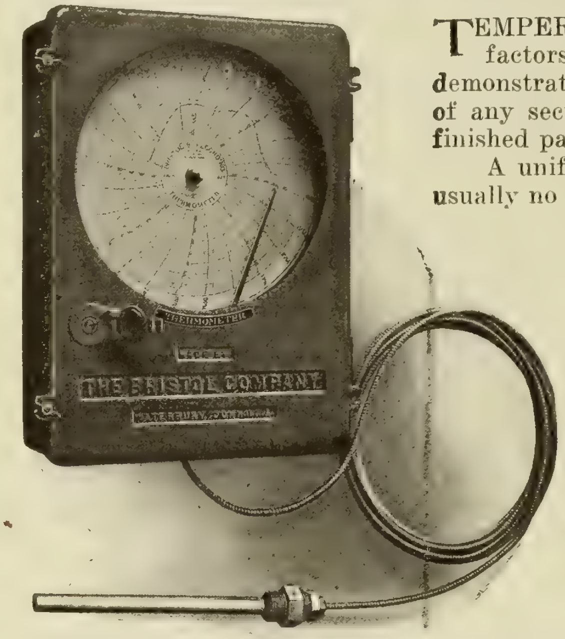

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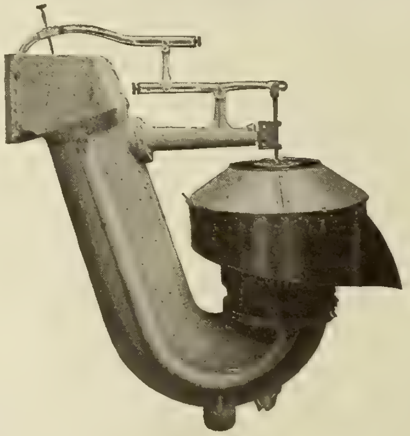

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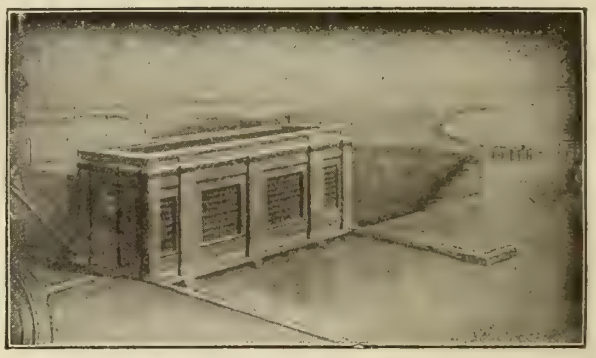
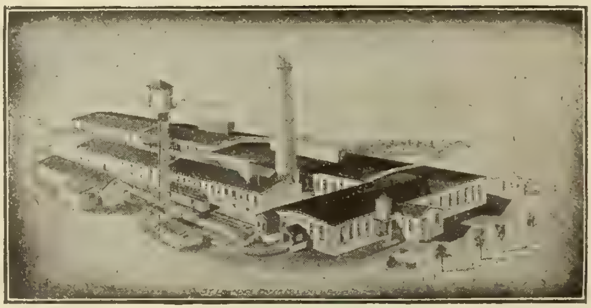


Power Plant, Montrose Division, Merritton, Ont.



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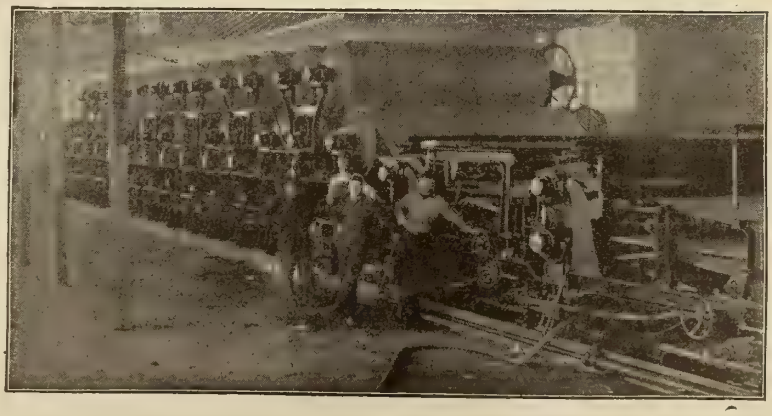

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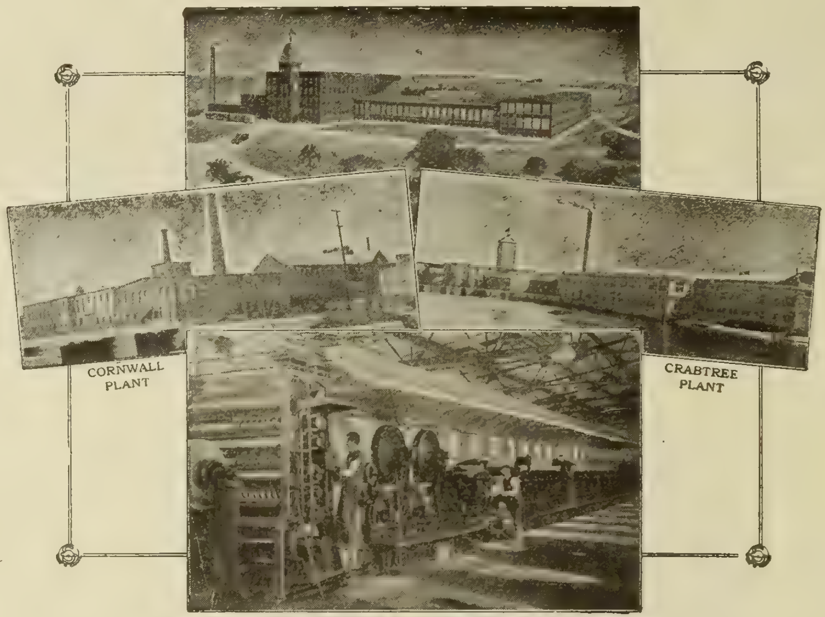
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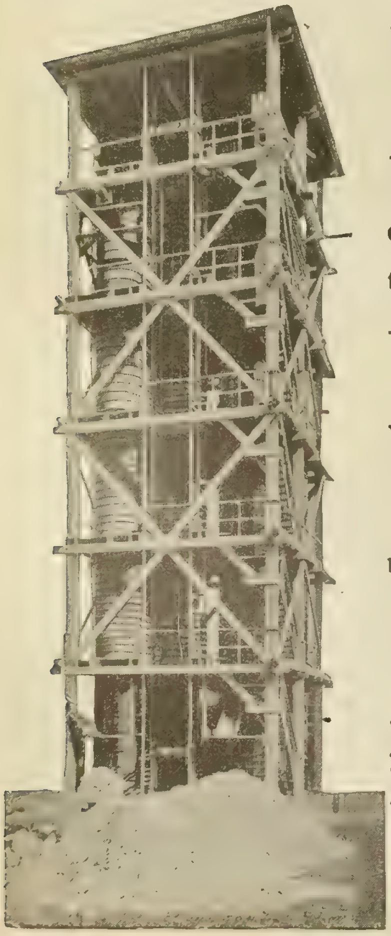

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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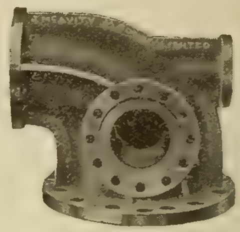

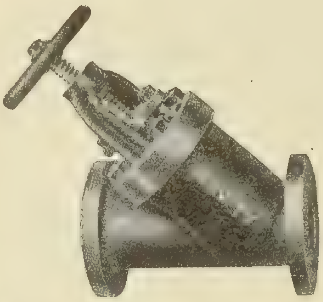

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EDITORIAL

WOOD PULP IS FREE

The most important piece of news this month is the report from Washington that the United States Senate voted, 30 to 22, against a duty of 5 p. c. ad valorem on bleached and unbleached chemical pulp. Perhaps there is nothing startling or unexpected about this action, but it is a bit reassuring to know that business will go on as usual, without the need for adjustment and re-arrangement that would have been necessary if the present status of pulp in our dealings with United States customers had been disturbed by the imposition of a duty on chemical pulp.

The action of the Senate on the whole pulp and paper schedule, in fact, shows a distinct movement toward a scientific basis of tariff making; more particularly does it show an appreciation on the part of the elder statesmen of the necessarily increasing dependence of the United States on other countries for wood pulp and wood pulp papers as a result of the depletion of domestic timber supplies.

The production of all grades of wood pulp in U. S. mills in June 1922 was within 24,000 tons of the high figure of June 1920, a falling off of about 8 p. c. from that figure and an increase of 32,000 tons, or 10 p. c., over the past 5 year average. Evidently the pulp industry across the line has not seriously suffered from duty-free pulp in the past. Nor is it likely to suffer because of competition from outside. The pulp maker's difficulty is much more likely to arise from lack of foresight in providing for wood supply. He will suffer, and is suffering, from the policy that established mills a generation ago on the assumption that there was wood enough in their limits for 30, 40, or 50 years, and refused to consider the future beyond their own tenure of office. That future is here now and that policy has borne a crop of troubles that some present policies will bear a few years hence.

The United States market needs Canadian pulp, and the Senate was right in refusing to levy a duty on it.

The Senate also took action on the tariff on papers, with the results given by *The Paper Mill* as follows:

> "Paper board, wall board, and pulp board, including cardboard, etc., was voted a duty of 5 per cent. ad valorem, Wednesday, while filter stock, composed wholly or in part of wood pulp, cotton or other vegetable fiber, carries a 20 per cent. ad valorem rate. The duty on tissue, stereotype, copying, carbon papers, etc., when weighing more than 12½ pounds and less than 18 pounds to the ream, 4 cents per pound and 15 per cent. ad valorem.
>
> The duty on papers with coated surface or surfaces, not specially provided for, is 15 cents per pound and 15 per cent. ad valorem, while such papers when embossed or printed, otherwise than lithographically, and papers wholly or in part covered with metal or metal solutions are protected with a rate of 5 cents per pound and an ad valorem of 15 per cent. The duty on cloth lined or reinforced paper is 5 cents per pound and 15 per cent. ad valorem, on grease proof and imitation parchment paper the duty is 3 cents per pound and 1 per cent. ad valorem, while on all boxes of paper or papier-mâché, covered or lined, the rate was fixed at 5 cents per pound and 20 per cent. ad valorem.
>
> Practically all of the ad valorem equivalents today represent substantial reductions from the duties originally recommended by the Committee on Finance."

Our contemporary comments editorially on the situation, in part as follows:

> Although the proposed duties on the importation of foreign paper adopted by the House of Representatives have been reduced by the Finance Committee of the Senate, we are delighted that this industry will be protected to some degree at least from ruinous foreign competition.
>
> We recognize that the pressure of the Farmer Bloc in Congress has forced down the proposed tariff rates all along the line, including the duties on paper. It seems that the farmers have not learned that protection for the manufacturers is indirectly protection for them, because the prosperity of one group affects the prosperity of all the rest of the nation. . . . The same harsh economic law was partially learned by the American newspaper publishers during the war when they paid high prices for news print because they had been so short-sighted in pre-war years as to force the news print industry over the border into Canada, because by one means or another they forced the American news print manufacturers to accept less than a just and reasonable price for their product.
>
> During the last two years the American newspaper publishers tried unsuccessfully to use foreign news print on their presses. . . . But how long will the presses of American newspapers be able to run on American paper unless the American paper industry is sufficiently protected from ruinous foreign competition so as to obtain a "just and reasonable profit" on the paper manufactured.

We beg to differ with friend *Paper Mill* on the soundness of the basis of their argument. In the first place, assuming that the farmer's pressure helped keep down the tariff rates, it is necessary for the farmer to buy at reasonable — not tariff raised, artificially boosted—prices in order that his products, which are the real fundamentals of manufacture, may be sold at figures which will enable the factory worker to live and produce goods at such cost as will enable them to compete in the world's markets.

Again, it was not so much the action of newspaper publishers in agitating successfully for free newsprint that discouraged development of mills in the United States as it was the inevitable movement of mills to supplies of raw material and adequate power that caused the great expansion of recent years in Canadian paper production. We venture to suggest, further, that the price of newsprint was largely due to competition among paper mills who knew well enough that other countries could not possibly provide more than a fraction of the requirements of the American publisher and could just as well have stood pat on a fair price as to permit their customers to lead them into an ambush of self-destructive price cutting.

It is not, as we have said before, "ruinous foreign competition," to use our contemporary's phrase, that is the greatest menace to the newsprint industry in the United States, it is lack of common sense and ordinary foresight in providing for raw materials, especially wood and water. And wiping out the wood cuts off the water. A friend told us of seeing an old New York state pulp mill superintendent on the verge of tears as he pointed to two grinder lines dead because of low water since the forest cover had been taken from the water-shed where previously the stream had run almost bank-full the year round.

The price of paper has been set in the United States and will continue to be set in the United States as long as the mills there have sense enough to demand a fair profit and are satisfied with that. Canadian mills will benefit so far and for so long as the industry here conserves its available wood and water power through proper forest management. When our wood costs become unreasonably high, the industry will suffer because prices will necessarily mount and the resultant decreased consumption will mean part-time operation or the liquidation of the very high cost plants.

Don't lay it all on the publishers, and don't expect a customs duty to take the place of good management. The Canadian and United States mills are as nearly one industry as political boundaries will permit. The future is bright, if seen against the beautiful green of a luxuriant, protected, well-managed forest.

THROWING THE FOREST INTO THE FURNACE

Comparatively few of this year's forest fires were "acts of Providence," such as lightning, spontaneous combustion, etc., states the Canadian Forestry Association. Averaging up the whole Dominion, four out of five were preventable fires, had campers, smokers and others who use the woods for recreation or for making a living exercised a few simple precautions.

This summer so far, more than ten trees have been burned down by the "don't care" type of traveller to one that will fall by the axe of the logger during the whole of 1922.

"The future development of more than four-fifths of the area of Ontario, Quebec and New Brunswick," says the Canadian Forestry Association, "depends upon our retaining the forest growth. Forests with water powers spell industrial supremacy. Stripped of forests, four-fifths of Eastern Canada becomes a barren wilderness, for this proportion is non-agricultural. The real meaning of a human-set forest fire may be gained from the report of a large Ontario company that one man's carelessness with his camp fire destroyed more pine timber than their large mills would use in fifty-six years."

COBWEBS

The American Writing Paper Company's chart of the trend of printing sales and printer's paper purchases in the U. S. shows a distinct upward turn in all four factors covered. The chart should be carefully studied by paper men.

The second impression of Volume 3 of the Industry's textbook on Manufacture of Pulp and Paper is now being distributed. This is the best value for $5 the trade ever got in book form. The *Pulp and Paper Magazine* is handling the distribution outside of the United States, at the request of the Canadian Pulp and Paper Association.

CONTEMPORARY COMMENT

Is Mr. Ford Right?

(Montreal Herald)

Mr. Henry Ford is a man of many parts, and his friends are now out to make him President of the U. S. Here is an extract from an article in McClure's, which was prepared by him in collaboration with Samuel Crowther:

"A majority of people are not mentally — even if physically — capable of making a gool living. They are not capable of furnishing with their own hands a sufficient quantity of goods this world needs to exchange their unaided produce for goods they need.

"The average workman is more interested in a steady job than in advancement. Scarcely more than 5 per cent., while they have the desire for more money, have also the willingness to accept additional responsibility and work which go with the higher places."

The Need of Books

(World's Paper Trade Review)

We have from time to time remarked upon the need for providing facilities for the student of industrial technology who finds himself handicapped by lack of reading matter and the wherewithall to equip himself with a little library. Technical books are expensive, more so now than ever, and very few of the younger end in our mills and warehouses give the matter of purchase thought on account of the cost. It is a splendid sign of the desire for acquisition of knowledge among the new generation of papermakers that 64 should enter for an examination in which only seven sat last year. Incidentally, it is a remarkable tribute to the work of the Technical Section. If every paper mill and every large wholesale house would equip itself with a small library of technical books on papermaking and allied subjects, it would help materially to create a greater interest in the industry and it would also develop much latent talent.

Note.—The Industry in America has not only generously made possible a most comprehensive text book at really nominal cost, but has, through cooperative effort, established Correspondence Courses in Pulp and Paper making. —Ed.

In this thing one man is superior to another, that he is better able to bear adversity and prosperity.—Philemon.

Fundamental Policies of Organization

By B. A. FRANKLIN, Strathmore Paper Co.

This interesting article, which is extracted from "Industrial Management" indicates the importance of analytical thinking and originality as contributory factors to business succes.—Editor.

Some things seem so fundamental to the success of any movement, that it is a matter of surprise that they are not generally understood by those engaged in them; nor recognized as existing by those outside of them.

And yet many such movements are successful. They are successful largely because they follow along a beaten track of moderate success, beaten through the work of predecessors and animated by fundamentals.

It is perfectly well known, for example, that men will give the best in themselves, will strive, and fight for ideas under the proper urge. This is a fundamental thing.

It is a matter of observable experience that the most successful movements find means to draw to themselves initiative, energy, ability; to inspire cooperation and enthusiasm; to create confidence and a sense of fundamental fair dealing.

Experience shows that knowledge and improving ideas are obtainable by study, and most particularly and readily by an open minded touching of elbows with men whose constant experience is with various phases of a given problem.

Perhaps not so well known nor so generally appreciated, is the fact that no movement stands by itself; but is subject to influences from outside itself, greater or less, direct or indirect, in short or after long periods.

Men who realize these things in concrete ways are gifted with what is called foresight.

Men who act upon them establish policies of operation looking towards reaping their values.

Movements that are based on knowledge and appreciation of these fundamental things and with policies established to meet them, are most susceptible of success and expansion.

Now business is a movement — outside of government the most fundamental and important movement of men.

It is of course different from most movements, in that it involves the essential necessity that men must engage in it for the sake of living; but for that very reason subject to all the influences good and bad that other movements possess; and for fair and successful conduct it needs the most complete operation of sound, wise, well thought-out and far-reaching policies.

The development, particularly of industry, has established by growth, practice and precedent, many essential policies, especially of external and interchange relations. It may be said, however, that not so universally have the internal policies of industry been well developed.

There is nothing unnatural in this, if the beginning and operation of the ordinary unit of industry is considered. It is usually begun as an offshoot of experience or ambition in certain lines; either to make money, or to work out an independence in ownership.

It is an expression in leadership along accepted lines.

The dominant problems immediately become technical and financial. The present necessities of orders and of production require the utmost thought and action, and in very many organizations remain apparently the vastly more important ones.

All of which is of course perfectly natural and understandable, and in the progress of things greatly productive.

Nevertheless every industrial unit is a movement involving first the continuous and intimate cooperation of a number of human beings, preferably a continual and advancing relation with other business units over a wide territory, and the hearty good will of a great many individuals and groups both inside and outside of the movement itself. And this involves for advancing success, both thorough organization and well thought out and expanding policies. For profitable actions spring automatically out of well defined and adhered-to policies, which otherwise occur only occasionally as apparent inspirations.

Policies of course must deal with a running relation, or be based on an anticipated need or situation; and to make them it is essential to have the specific situations and conditions in mind as a basis for formulation.

The most vital and essential reason for policies in a movement lies in the relations of that movement.

By far the most potent, because the most volatile and susceptible relation of industrial organization, if not the most difficult to obtain, is the human relation.

In the final analysis it is men; not money, machinery, nor methods that accomplish results—men led and inspired to best effort through their belief in a project as a means of self-expression and economic independence.

Russia offers overwhelming proof of this.

Since men are so much more easily gathered together than the other elements of industry, too little attention has been given to selection of this element in many organizations.

A study of successful units will, however, show that with initiative, energy, and cooperation gained through proper choice in this element, the other elements are eventually obtainable, and with greater relative results than if utilized without them.

A first series of organization policies must therefore deal with this important relation, the human element.

With that portion of the human element which operates more or less according to the laid out plan, any policies to be in the long run effective, must make the usual practice of *whistle, blow* and *hustle* one which is gladly adhered to because of the best working conditions; a fair pay based on the reasonable cost of a decent standard of living and relative skill shown; an agreeable loyalty induced by methods which recognize length and faithfulness of service; and particularly an assumption that each worker is in some sense, by the very fact of his daily participation of effort toward success, a partial partner in the movement.

Such policies involve, according to circumstances and ability: education, training, insurance, health consideration, savings, helps, beneficial societies, athletics and play methods, stock ownership, works councils, and indeed the development of all practical plans through which, within reasonable limits, the worker may attain such share of enjoyable living, development and social benefits as will tend to make him feel contented with his progress and desirous of delivering the maximum cooperation.

As to the organization personnel, the policies must be of a more intimate personal nature.

The organization personnel makes up the management of the unit in its broadest sense, and out of it must come, if they are to come, those elements of leadership which by inspiration, by analysis and conclusions, by careful observation and action, and by constructive ideas and creation take the operation of the unit out of the average of ordinary business into the smaller and more effective group of organizations.

Now these qualities are more often of course individual than group possessions; progressive developments from original ability rather than sudden inspirations or accidental occurrences.

The pertinent policies then must cover, in a broad way, selection — most importantly selection — since there are natural gifts not equally divided; and circumstances or opportunities of early development not equally offered or seized.

Men are neither alike, nor equally fitted for particular undertakings. To fail to realize this or disregard it is an executive weakness.

Men must of course be chosen for their qualities to match a particular function; but any organization is fortunate, size admitting, if it has a pessimist and a dreamer, a grouch and an inspirer, an autocrat and a democrat, a hustler and a conservative, provided it can so place them as to coordinate their qualities.

A proper policy deals with education along both specific and general lines. Too many decisions are made based either on uneducated opinions and beliefs, or on assumed facts.

Probably after selection one of the most important policies dealing with organization personnel is training. Too often executives say and think, that if they could multiply their personalities, ideas, and actions, they could accomplish vastly more. Acknowledging the truth of this, in many cases the apparent impossibility of it may be vastly eliminated if executives will, by training, multiply themselves in their subordinates.

What coming men need is to be taught the philosophy, the policy, the inherent values, the necessities of quick decision and movement in fundamental actions. A good executive is a good teacher. Too many render important decisions without explanations, leaving their subordinates either dazed, doubtful, or operating without enthusiasm through possible lack of understanding.

An executive can well afford to sell his ideas to his effective group, if he desires them sold to the public, or to be enthusiastically put into operation.

A policy of widening freedom of decision, very difficult in the case of many executives, is essential for the development of capable men.

Most importantly some policy is necessary, whether it be that of salary satisfaction, fair treatment, promotion, opportunity, or stock interest, which will not only hold men all along the line to the enterprise, but make them want to remain a part of it.

An important policy should deal with the relation between the working force and the organization personnel, which will create understanding and harmony between them, and tend to eradicate a feeling, often expressed, that there is any class distinction. One way this may often be effected is by promotion from the one to the other as occasion arises.

It is true of any industrial unit that it consists of two main divisions as to its methods. One division relates to the particular branch of industry to which it belongs and deals with the methods of processing and handling its particular product.

The other division has to do with methods of intercourse and interchange; of system and management, internally and externally, which are, with slight modifications, common with all industrial units.

Industry is a development. Its methods in any one unit are in whole or in part, and usually in major part, despite constant new and occasionally radical changes, those methods established by precedent, practice, or exploitation. They are naturally, here and there all over the world, being further originated and developed.

Definite policies may wisely be laid down to deal with such a certain, regular and yet vital condition.

With the first division, namely that of methods of technical operation and indeed also of market conditions, there is involved a policy of friendliness and lawful cooperation with competitive units, both through trade associations and their technical branches, and by such friendly discussion and visitation as may mutually be carried on.

Competition has very largely discovered that its intelligence can more effectively be used in cooperation than in strife; and businesses that let the majority of their competition make for them advantages through association which they may share in without participation in expense or effort, seldom get the full advantage, nor do they show a broad spirit of fairness essential to greatest success.

A broad policy and a profitable one will cover trade association cooperation.

Also it is very essential in modern progress, if advancing ideas and methods are to be absorbed, that an industry shall put its organization personnel in as close touch as possible with the other units of the industry and with the means of education as to the industry.

In the matter of the second division, namely methods that in essence are common to all industrial organization, a reasonable policy must consider constantly the engagement from time to time of external expert advice and assistance, as well as the education of personnel as to modern industrial theory and practice; with the introduction likewise of some men at the bottom who are graduates of business administration colleges, as at least offering material of promising calibre for the building and maintenance of modern methods.

A policy broadly related to this same general condition has to do with the relation to the world outside the fence, in the matter of disposal of product.

It is in many industrial units too much the case that the making and marketing of the product is an impersonal matter. Whereas experience will show that both are susceptible of improvement through the personal touch of the insiders with the outsiders where both parties have an interest in the eventual outcome.

Personality, acquaintance, friendship, understanding, the hand touch, will always be more powerful and more broadening than the telephone and mail communication.

A careful and systematic policy ought therefore to obtain of personal intercourse through visitation, not only of the organization personnel with the outside world, especially as it relates to those interested in the disposal of the product, but particularly of the outside world to the plant.

Human beings, travelling daily only between home and plant, find it difficult after awhile to continually visualize the needs and viewpoints of those whom they do not know, and of markets they do not see; and they become narrow. Through lack of knowledge of character and conditions their judgments fail to register rightly.

It is even more true and valuable that the interest of important factors in the merchandising field can be caught and increased by the personal view and hospitality of the plant itself, by the personal knowledge of its aims and methods, and by the personal acquaintance with the personnel.

Such a policy as will bring this closer personal communication about, will not only establish a mutual confidence which will create, retain and increase existing relations, but it will be found extremely productive of new and expanding ideas and improvements.

An even broader policy is necessary to cope with an increasing set of indirect influences, which disregarded, grow to have a very large direct effect on many industrial units.

In New England, for example, the growing relation of population in the cities to that in the country, involving also the abandoning to some degree of local food supplying, has increased the cost of living in relation to other competing sections to such a degree as to make competition increasingly difficult; and in some cases so much as to threaten the very existence of some lines of industry.

There are also the questions of radicalism, of the nature of the citizenship and population, of the diversity of industry, and many others, which, when not ameliorated nor controlled as much as possible, not merely cause real losses and eventual stunting of growth, often in ways not appreciated, but also have a very definite effect on the organization personnel.

No longer is the old idea true, practical, or comprehensive that the interests of any industrial unit are confined inside the fence. Nor indeed, and this may seem a heresy to many, can it be continuously maintained that majority ownership in these modern days gives absolute right over the interests of all of those people involved internally in an enterprise. Rather is it a trusteeship with beneficiary rights; and all others, living up to a fair standard of cooperation for the general good, earn prime consideration by the very fact of casting in their lots with the enterprise. Broad policies based on this understanding will obtain broad results.

For business is becoming not so much a matter of mere production; of barter and trade; but what it always should be for the greatest happiness and success—a matter of personal touch and understanding, of the widest mutual values, and of a service which reaches advantageously the greatest number of people.

The executives, the management, owe to the enterprise, to all engaged with it internally and externally, and to the public, on all of whom depend eventually the success of the organization, large responsibility in consideration of all of these things; and can only work them out fully by an understanding of them; and through the establishment of wise, carefully thought-out organization policies.

REFORESTATION IN CHINA

During the year ending with the spring planting in 1920, China spent from $200,000 to $250,000 in forestry enterprises, mostly in nursery work and forest planting. The year showed a production of 100,000,000 trees in more than 1,000 nurseries and the planting of 25,000 000 to 30,000,000 trees on 100,000 acres of land. Prof. John H. Reisner, of the College of Agriculture and Forestry, remarks that while these figures semm small it should be remembered that interest in forestry in China is of recent development. It is stated that about 2,500, 000 trees have been planted, about 1,000,000 of them in the spring of the present year. Three nurseries were maintained, carrying 1,275,000 transplants and about 3,000,000 seedlings of 73 different species. Trees and seeds for nurseries and more than 50,000 trees for transplanting were distributed. There are also three substations located in different parts of the country, and two more are being planned. Forestry development is being carried forward under modern methods, largely under American trained foresters. The Government railways are engaged in thework with a view to supplying their own ties and timbers used in railroad construction and maintenance, and other railroads are expected to fall in line. (The China Press, June 4, 1922.)

ALEX MacLAURIN JOINS SILENT MAJORITY

The death of Mr. Alexander L. MacLaurin, vice-president and general manager of the St. Maurice Paper Company, Limited, Montreal and Three Rivers, is a distinct loss to the pulp and paper and lumber industries. He died in the Montreal General Hospital on August 3, after a brief illness, death being due to a complication of diseases. His age was 70.

Mr. MacLaurin came from a family whose business associations are almost entirely with the lumber and pulp and paper trades. He was born at East Templeton, P.Q., where he was trained in the lumber business under his father. In 1886 he joined the Charlemagne and Lac Bureau Lumber Company and the Gres Falls Company later came under the direction of Mr. MacLaurin. These concerns, with their separate limits and mills, were afterwards acquired by the Union Bag and Paper Corporation, New York; Mr. MacLaurin continuing to act as general manager, and in 1907 was given a seat on the board of directors. Up to 1915 the business was that of manufacturing lumber and pulpwood. In that year, however, the Union Bag and Paper Corporation decided to follow the example of other American concerns and to build a kraft and sulphite mill and a newsprint mill in Canada. For that purpose the three Canadian companies were merged in a new company, the St. Maurice Paper Company, Limited. The mill was constructed in the Three Rivers district, where the company had already a groundwood mill and a saw mill. Mr. MacLaurin was appointed vice-president and general manager of the new company.

The death of Mr. MacLaurin is a reminder of the close relationship between the pulp and paper and lumber industries. Originally the companies referred to were mainly interested in the manufacture of lumber, but under the new conditions the forest resources were diverted chiefly to the pulp and paper trades. The fact that the Union Bag and Paper Corp., were able to command such abundant raw material was no doubt a vital factor in their decision to enter the Canadian paper field.

Mr. MacLaurin held some firm views on the conservation of forest resources and was keenly interested in improved methods of logging. He was especially interested in the hauling of pulpwood by tractor, believing that an efficient machine is the most economical form of transportation. Accordingly the St. Maurice Paper Company use tractor haulage. Mr. MacLaurin was a constant attendant at the various forestry conferences held in Montreal and also at the annual meetings of the Woodlands section of the Canadian Pulp and Paper Association, although he rarely spoke in public.

He was a past president of the Canadian Lumbermen's Association, past president of the Montreal Lumber Association, member of the Council of the Montreal Board of Trade; president of the Campbell-MacLaurin Lumber Company, Limited, Montreal, and McLaurin Brothers, Limited, Lachine. He was also president of the Laval Electric Company, and a director of the Crown Trust Company, Yorkshire Insurance Company, and Montreal Stock Yards Company.

He is survived by two sons, Mr. J. P. MacLaurin, woods manager of the St. Maurice Paper Company, and Mr. Arthur L. MacLaurin of MacLaurin Brothers, Limited, and by three daughters.

A very large number of messages of sympathy from the United States and Canada were received by the family.

The funeral took place on August 5 at the Mount Royal Cemetery and was attended by many representatives of pulp and paper and lumber industries.

The Newspaper Business

Few people really comprehend the extent and the magnitude of the newspaper business, as some folks are pleased to characterize the great newspaper publishing industry.

Without making any attempt to portray or to discuss the ethics of the profession of journalism and the nature of the public service rendered to the people every day in the year by the earnest men and women who comprise the news and editorial staffs of the newspapers of the country, it may not be amiss to direct attention to the service performed in a purely commercial way by the advertising columns of the newspapers.

Within recent months many important facts relative to the newspaper earnings have come to light and happily with the full knowledge and consent of the owners of great groups of newspapers.

For example: Mr. Hearst recently published an advertisement in the trade press, stating that his volume of business in 1921 amounted to eighty millions of dollars, about equally divided as between newspapers and magazines. Some weeks later Mr. Brisbane informed the New York State publishers in annual meeting that Mr. Heart's earnings are now running at the rate of $100,000,000 a year and profits at the rate of about $1,000,000 a month. The great Scripps organization makes no secret of the fact that its earnings last year were in excess of $25,000,000. Mr. Wiley recently told the National Retail Drygoods Association that the New York Times did a volume of business amounting last year to $15,000,000. The Booth Publishing Company, of Michigan, carried more than $5,000,000 total earnings last year.

This is information of genuine public interest and it is safe to predict that there will be more of it available in the future, although difficult to believe that such information with respect to American newspapers will be published annually as is the situation today in Great Britain. These factors inspired us to inquire of the United States Census as to newspaper earnings. The only figures available were for the year 1919 and they cover the publishing and printing industry as a whole. Some of these figures are, however, of decided interest.

The volume of earnings reported to the census by the publishing and printing industry of the country in 1919 was nine hundred and twenty-four millions of dollars. This figure includes earnings of newspapers, magazines, class and technical and farm papers. The raw materials, including freight and cost of manufacture represented approximately three hundred million dollars. The value added by manufacture amounted to $623,000,000. Of this $924,000,000 we know positively that advertising and circulation revenues constituted approximately $806,000,000, the remainder being accounted for by the volumes of pamphlets, machine composition, etc.

Of the 17,362 establishments that were surveyed, or reported to the census in 1919, 97 p. c. were newspapers, dailies and weeklies, tri-weeklies and semi-weeklies. The total invested capital of the 17,362 establishments amounted to $640,000,000.

The newspaper business in 1919 embraced 16,965 different establishments. There were 424 dailies, 604 Sundays, 93 tri-weeklies, 452 semi-weeklies and 13,375 weeklies. The capital invested in these establishments, exclusively newspapers, was about $500,000,000.

The volume of newspaper business in 1919 amounted to $566,321,000 as follows: $373,000,000 advertising, $192,000,000 circulation. There were employed as executives and employeess 160,401 opeople. The salaries and wages paid in that year amounted to $204,000,000. The rents paid were $7,000,000; the federal taxes $10,000,000; state taxes $3,000,000.

Another indication of the power and influence of the newspaper is indicated in the circulation figures as reported to the Government and the A. B. C. at April 1st last.

543 Snday newspapers at a combination net paid average circulation of 10,200,000 copies, with a joint line rate of $26.71 and a miline rate of $2.55 per million paid circulation.

1,596 evening newspapers had a net paid daily average circulation in excess of 18,800,000 per day at a joint line rate of $61.05 and a miline rate of $3.23.

543 Snday newspapers at a combination net paid average circulation in excess of 19,700,000 for Sunday and a joint agate line rate of $44.41, and an average rate of $2.25 per line, per million subscribers.

But even in the face of these figures we hear a great deal in some quarters these days about the decadence of th press, the loss of power and influence of the daily newspapers. Now what are the facts?

The census reports show that the newspapers reported to the United States Census in 1919 a sale of 8,000,000 copies per day more than in 1909, an increase from 24,000,000 a day in 1909 to 33,000,000 a day in 1919, an increase of 36 per cent. 604 Sunday papers reported in 1919 a net paid circulation of 19,000,000 as compared with 520 in 1909, a net paid of 13,000,000, an increase of 6,000,000 Sunday in the ten-year period or 45 per cent.

Advertisers, especially retail advertisers, assert that newspaper rates are too high, that during the war papers assessed the advertisers increases that the advertisers could not afford to pay. What are the facts?

A close study of the census reports for the year 1909 show that circulation revenues formed 36 per cent and advertising 64 per cent. of the total income of newspapers. In the year 1919, circulation revenues formed 34 per cent and advertising 66 per cent. In other classes of publications — magazines, etc. — circulation in 1909 formed 48 per cent. of total income and advertising 52 per cent; whereas, in 1919 circulation paid 35 per cent and advertising 65 per cent.

Few people have any just conception of the tremendous volume of advertising in the newspapers. An idea and an appreciation of what the newspaper means in a purely commercial way to the people of the United States, is shown by the fact that the volume of advertising — national, local, classified, of the daily newspapers of the country amounts every day to a book of 200,000,000 pages, each and every page the size of a standard newspaper page, 300 lines deep, seven columns wide.

This is the volume of newspaper advertising delivered every day of the year into the homes of the people. This calculation does not include news, features or comics. It represents commercial advertising exclusively. Such a volume of business would represent an annual book of 21,000,000 ft. thick, equivalent of 21,000 Woolworth buildings, piled on top of each other, seven times higher than Mt. Everest. Turn these pages end to end and you would have a newspaper page advertisement, end to end, that would circle the globe a thousand times.

Such briefly is the power, influence and magnitude of the newspaper business in its commercial relationship exclusively.—Editor and Publisher.

Newspaper stands in Spingfield, Mass., are sore over the decrease in price of the daily papers. They claim there is no noticeable increase in the number sold, but a serious decrease in profit from sales.

A Talk to Paper Salesmen

By HARRY R. WELLMAN
Professor of Marketing, Amos Tuck School Dartmouth College

Those of us in the sales game today, have lived through the most interesting cycle of sales history. We have seen the Post Road and the Old Tin Peddler's cart supplanted by the modern paved road over which rolls the "self service store at your door."

We have seen the talking machine grow from a noisy, wheezing novelty into a high-grade musical specialty. We have seen patents expire and the specialty becom a commodity — a private brand even, selling under highly competitive commodity conditions.

In the Agricultural field, we have watched the horny-handed son of toil leap out of his Ford into a Rolls-Royce and back into the Ford again. But now, not appreciating his lowly flivver, we have seen him secure legislation that permits him to raise as little as he pleases, sell it when he pleases and for how much he pleases.

We have seen too, the mild beginnings of cooperative associations grow into strong, impregnable trusts, collecting ten cents from us for an orange that is still worth five cents. If we live in towns, we know it will cost us more to do business with the guileless farmer on his native heath, than it will to buy the same products in the market — delivered.

In your own business even, you have heaped association upon association, until at present it would appear to be almost impossible to find anyone connected with the business who has time to do anything but read and collect statistics on "how rotten business is". Salesmen to sell paper are indeed become exceedingly rare.

All of these changes in general business or, in general economic conditions which business reflects, could not fail to influence the paper business. The significant thing to remember, however, is that with all these changes, the fundamentals have remained unchanged. The "store at your door" self-service idea, is simply a modern variation of the old tin peddler. Both offer you merchandise when you want it, where you want it, and at a price you are willing to pay. The phonograph, changing from a specialty to a commodity, is simply obeying economic laws of supply and demand. The ten cent orange remains because we want a branded orange and are willing to pay for it.

In general, both the commodity and specialty fields, have felt keen competition that forced more intelligent marketing of their wares. And whatever that competition may have been, it will be as nothing compared with the competition of the next ten years. Sound economists or, as some of us once preferred to call them, "long haired theorists" told us at the beginning of the last Democratic Administration, that it was time for American business to calm down as we were reaching the end of our open markets. If you will think back to that time — even in the paper business, you will remember huge inventories and sub-normal sales conditions, that were raising grave financial problems. The war cleared the shelves but the boom following the war refilled the whole works.

Paper as a business expanded with the rest. Today we find production possibilities estimated as between 30 p.c. and 40 p.c. higher than our known market can consume. Moreover, we find that nearly all the production economics that can be made, have been made and that the costs of administration and finance have been reduced to an irreducible minimum under present conditions. In all lines in fact, production says to sales, "we've made all the savings we can, make a few savings yourself."

This condition is indeed, general. On every side we are seeing new methods used, new studies made, to decrease the present cost of sales. A recent investigation in the general commodity field discloses the fact that we now have the sixty-three cent dollar. In other words, it is costing us sixty-three cents to distribute each dollar's worth of merchandise.

And the public knows it. Moreover, the public means to have it stopped. While money was easy, the public did not care what anything cost. Now — as the department stores will tell you, even the men are shopping for real values. Since this is the first time this has happened in the later economic history of this country, it is highly significant as it reflects a fact, not a theory.

As Mr. O. D. Street points out in his discussion of the electrical jobber, "public sentiment in this country in fact getting around to the point where it is going to be necessary for every middleman to prove that he renders a service commensurate with the price he adds to the cost of merchandise. Almost every middleman is considered a parasite by the public at large." With the pressure of public opinion added to the more pressing need of profits, do not blame your bosses for putting on real pressure to reduce sales expense. The sales department is faced with doing the job, or having it done for them. Paper must be sold — and at a profit. The mills must be kept running. From the point of view of production, of finance and of administration, the mill owners have done their best to decrease expense. Now it is your turn.

It seems a large order but the situation has its bright side. Of all the distribution businesses of today, paper is the most archaic. Therefore, the improvements will be easier to make and the results will be more quickly apparent in savings. While other businesses have improved their sales methods, the general paper business has done very little. If one mill dared attempt new methods, all the other mills laughed them to scorn. And so you have kept on putting the most modern machinery into the plants —and used the most antiquated and outworn methods in the selling field. The old jobber—merchant, printer machine, has creaked for a long time. As long as it ran at all, however, you made no improvements other than adding "oil" occasionally. Until Mr. Volstead entered the field as a competitor, you purchased many of your carload orders with champagne suppers instead of with salesmanship.

Why has this condition been allowed to continue in the paper business after it had been abandoned in other lines? Principally, I think, because most of you honestly believed that the paper business was "different" from other businesses. This would be a normal answer as it reflects the same state of mind that other businesses had to go through before they found the right answer. But in finding the right answer, it will help tremendously if you will recognize the fact now that the paper business is not different, that it depends upon the same economic conditions and that it can be merchandized the same as any other commodity.

In the last two years, I have been permitted to study the paper business from the inside out. I have interviewed printers—and viewed the remains of wonderful portfolios designed to help the printer collect new business, but now passively collecting dust; I have interviewed jobbers—and found paper piled on their shelves that they did not know they owned and of which their salesman had neither price nor sample. I have talked with salesmen who had excellent selling ideas but who did not dare attempt to merchandise their lines with the jobber, for fear the jobber's salesman would get sore!

This state of mind results in waste selling effort on the part of the mill and the jobber; it results in duplication of effort by both salesforces and occasionally, by the addition of still further field forces uplifting the printer; it results in slow turnover for the mill and for the jobber, with resulting loss of sales profits and an added interest charge for storage. The point is, all of these wastes are represented in the selling price of the paper when it reaches the market. Loaded with these costs, the price is too high, the final consumer won't purchase and another mill goes to the wall or is absorbed into some new combination to reduce overhead and selling expense. You don't have to take the economist's theory for this. The present combinations furnish fairly practical examples.

The remedy, like most worth while remedies, is simple and is based on sound, economic facts. Moreover, other lines of business have done the experimenting necessary so that the paper business can start with facts rather than theories. The remedy is standardization in the merchandise itself, standardization in the methods and trade-channels used in selling, and a constant study of changing conditions to permit immediate changes in method and product, to meet these conditions.

Taking up these proposed changes in order, much has been done toward the standardization of product. Much still remains to be done, however. Grades, colors, sizes and cutting dimensions, are still subject to improvement. In addition, I dare to think we may see standardization as between rag and sulphite bond. Each of the changes that have been made, however, have encountered serious objection from the trades in general. It took over three years of consistent effort on the part of S. D. Warren, Co., to have their work recognized as beneficial to the trade at large, by competing salesmen.

Only a little while ago, salesmen were speaking tolerantly about competitors who manufactured papers in the "twilight zone." How many of you today, are not offering these same twilight zone papers, papers made at a price to meet competition. Do you realize what you are doing when you holler for these extra numbers to meet competition? You are simply lowering the standards of the entire paper business and putting an added cost on your own mill. When other mills stop making a line, be a little more hesitant about asking your mill to jump into this field. It may be that there was no market in the first place. When other mills commence standardization in lines, quit knocking. Every step in this direction helps your business. It means simply that your own mill will have to find its place in the market. When it does, most of your selling troubles are over. Thanks to your associations, your market possibilities are pretty well known. Remember that the introduction of a new brand and price by any of you, simply lowers the general efficiency of the paper market and lowers the average price level.

Just the other day, the vice-president of one of the biggest paper companies in the country said to me, "business is pretty bad but we are coming out with a new sulphite bond that will knock 'em cold." I asked him why he was coming out with this product, if he knew that there was a place for it and if he realized that he was lowering the whole legitimate sulphite market. He said, "no, he hadn't thought of that". Yet he sells raw material to other mills whose sulphite business is their bread and butter.

There is too much of this going on. The reason I am talking to you about it is because you are encouraging it every time you ask for a different mark or label, at a different price. They are too many brands now. If these in between could be taken from the market and better general selling methods applied, I firmly believe that there is business enough in this country to keep every mill running and to increase the salary of every paper salesman. The need is new uses, not new brands. When Hammermill develops new office uses for its products, it increases the general sale of paper. Instead of belittling their efforts, get together with the office appliance people, the direct-by-mail folks, and tell your mill and your customers of new possibilities for the sale of paper.

Taking up the second suggested remedy, let us go into the jobber situation a little more in detail. In the paper business as in other businesses, there are just three types of jobbers; (1) the real jobber-merchant who gives full co-operation and service for the limited lines he carries and for which he receives pay; (2) the semi-jobber who splits up his line, his time, hisco-operation and his sales effort, performing semi-service for the mill for which he is overpaid, and, (3) the worthless jobber who buys and stocks anything and performs no intelligent service, even for himself.

The first or, worth-while jobber, is in effect the sales representative of the mill. He sells, stores, ships, assumes credit risks and works with the mill in all selling plans. He is worthy of his hire. He runs his business as a business, pays his bills on time, uses turnover to increase profits and realizes that it is good business for him to take part in any organized selling plan the mill adopts. He knows he cannot serve two masters, so his lines are selected on as nearly a non-competitive basis as is possible. He reduces the cost to sell. He performs a real service function and he will remain.

Let us discuss the second type, the semi-jobber, in terms of costs only. There is a fair and legitimate price to be paid for jobber service. The type of jobber we are now discussing, is not entitled to standard jobber pay, but pay for the service he performs. He slows up our mill by keeping our merchandise in stock. He puts all his sales efforts on private brands. If we are to use him at all, we have to create the demand in the field with sales-crews and advertising. The only service he performs well, is storage. He is slow in ordering and slow in paying his bills to us. He plays with his own brands against our brands. He is therefore entitled to pay only for his storage and credit service. Yet we have let him buffalo us for lo, these many years! His future is plain; he will become a first class jobber under proper sales effort, or he will vanish. Modern competition has little place for him.

The third type is the real menace. Used for an unloading station by standard mills, used as a sales agent for consignment business by others, shopping around on his own for "bargains", he typifies the basement bargain store, in the paper business. If he can see the light, all right. If he can be interested in becoming a real sales agent, use him. If not, drop him.

The net of the jobber situation is just this; there are too many useless and semi-useless jobbers. Make them good jobbers or drop them. The mills are not in the hands of the jobbers. Jobber selection is still possible, jobber elimination still desirable. The jobber and the mill must have mutual interests that will reduce the cost of selling. Whether this is worked out by a combination of mills selecting certain jobbers, by mutual stock ownership, jobber and mill or, by any other means, is not important. Selling co-operation, however, must be secured if wastes are to be stopped and profits again appear.

And right here is where salesmanship comes in 100 p.c. strong. Selling the paper itself is incidental. Selling confidence in yourself, in your product, in your mill and its policies, is the task before you. While I am a very strong believer in the use of scientific methods in selling, I have never lost sight of the fact that a large percentage of the world's business is still done on confidence. Confidence that your work is good. Confidence that your merchandising ideas are sound. Confidence in your house. The right type of jobber is waiting for you to prove to him that you and your mill are worthy of his confidence. He is tired of shopping around. He is tired of piker competition. He wants to be sold.

Less than a month ago, I called on a printer located in a small mill city in New Hampshire. Three salesman had called upon him that day; two dealer service men had called the day before and he showed me three new portfolios designed to help him get new business. And there was nothing new in any one of them. This type of duplication of sales efforts must stop. If the jobber and the jobbers salesmen are being paid to sell paper, they must do so. The business will not stand a double charge for selling, or advertising. Moreover, the printer doesn't like it.

Selecting and building up jobbers or, creating your own sales agents, is no longer a theory. Hammermill, Strathmore and the American, are trail blazers. They are performing a great service to the industry. Instead of criticising their methods, figure out as good a method for yourself. They know their plans are fundamentally sound, they are willing to wait years to prove it. When that time comes, however, they will control their distribution. They will schedule their production with their sales and reach the market with a lower price than can now be approximated with haphazard jobber methods.

Finally, perhaps you are wondering just why I have spent so much time trying to sell you ideas that your mills ought to have insisted upon long ago. For just this reasons; you are the only part of the business that can bring about these conditions. You are in the field, you know conditions. You are eyes, ears and arms for the mill. The mill itself has troubles of its own. Production, financing and wise general administration take up the time of the general executives. They depend upon you for their contact with the trade. The more knowledge you have of business generally, the better you will be able to advise them.

The rewards for salesmanship of this kind are ample. Business has learned that it doesn't matter how much you can manufacture, it's what you can sell that counts. When you have qualified to the point of being of real service to your house, promotion will seek you out. Business is suffering from the lack of real selling brains. There are just as many useless order takers as there are useless jobbers. Study your product, your market, put the old Yankee Yardstick on your jobbers and see if you can do the job for less money, and if you can, change your selling channels just as quickly as you would drop any other unprofitable line.

This is a year of sane thinking and prompt action based upon this thinking. Instead of being the lowest time in your sales experience, it is the time of your greatest opportunity. The job is there to be done. It isn't a question of "can you do it," it is a question of "will you do it." Forget that the paper business is different. It isn't. Read, think and talk with people in other lines of business. Keep on the ball—but off the sporting page for a while. Resign from the golf club—if you must, and join the library. The only person that will prevent you succeeding in this new job is yourself. Just as a starter, think up some new uses for paper to replace the loss in blanks, direct-by-mail and other printed effort, caused by the Radio phone. Every new idea affects the paper business. Quit reading statistics on how rotten business is, re-sell yourself to the paper business or get out of it. Seriously, I firmly believe this is your opportunity to put the selling of paper on an intelligent, profitable footing. Seriously again, I believe you are going to do it.

(Now please tell the Editor what you thing about it)

PAPER MILL FORESTERS TO FORMULATE PULP WOOD STANDARDS

Utica, N. Y., Aug. 4. — The Woodlands Section of the American Paper and Pulp Association has issued a call for a meeting at Utica on Tuesday, August 15, of New York state pulp manufacturers who buy pulpwood, to formulate standards for the contracting for New York wood. The proposal under consideration will be the advisability of developing standard specifications to govern the purchase and sale of pulpwood for New York mills, and the employment of official check scalers for the purpose of settling possible disputes between buyers and sellers of pulpwood.

If the present plan is carried out, suggestions will be formulated for three grades of pulpwood, and these will be submitted to inidvidual New York State mills for further consideration, and action at a later meeting.

Similar meetings are proposed in other states where pulp is manufactured, C. W. Hurtubis of the Hammermill Company of Erie, Pa., chairman of the Woodlands Section, is chairman of the general committee. O. M. Porter, formerly of the faculty of the New York State College of Forestry, now secretary of the Woodlands Section is secretary of the general pulpwood committee, and is handling the plans for the New York meeting.

A New York state forester, K. A. Swenning, graduate of the State Forestry School at Syracuse, who has been doing some excellent development work in the Ohio River Valley in reforestation of poplar for the paper industry, is the Ohio member of the general committee.

DOMESTIC KRAFT PREFERRED FOR GUMMING

Atlantic City, Aug. 4. — A discussion of the relative merits of domestic and foreign kraft paper for use in making gummed tape featured the meeting of the Gummed Paper Manufacturers' Association, at its second summer convention at the time of the convention of the paper box manufacturers.

The meeting was one of the best ever held by the association, and many subjects were discussed, not the least important being the question of raw materials. Most of the manufacturers declared their preference for domestic kraft, the difficulty of finishing Swedish Kraft being particularly noted.

A new step by the association will be the distribution to members each month of statistics bearing on domestic production and imports of foreign kraft, as well as conditions in foreign markets.

There was considerable informal discussion of the recent address by Chairman Gaskill of the Federal Trade Commission in which he declared strongly against the cutting of prices to below costs of production.

D. A. CLARKE IS ACTIVE

D. A. Clarke, president of the Clarke Steamship Company, Limited, Quebec, is also a director of the Labrador Fisheries; a director of the North Shipping Company, and a director of the South Shipping Company. A native of Toronto, he was educated in the public schools and the Collegiate Institute, later coming to Loyola College. After leaving school he entered the family business, the Gulf Pulp & Paper Company, later organizing the Clarke Steamship Company and the Clarke Trading Company, becoming president of these.

The Markets of Europe

(Special to *Pulp and Paper Magazine*)

Austria

Frankfurt, July 14. — The market position continues demoralized. The different groups of the paper and board manufacturing industries find themselves compelled, as a consequence of the extraordinary rise in the price of raw materials and of the latest and greatest increase in wages, to make all prices fit the new conditions. The scarcity of paper and boards continues, for since the last drop of the crown, Austrian paper makers can obtain better prices abroad than at home. It is hoped that before long the situation will clear somewhat. Paper for paper sacks is absolutely unobtainable. News print is likewise not to be had at any price, while orders for wood-free and the better grades of paper can only be accepted for "indefinite forward delivery and at prices remaining completely free."

Wages of German and American Paper Mills

Kartonnagen-und Papierwaren-Zeitung, July 7, 1922. — "Our too costly production has hitherto been the main obstacle to our healthy recovery. In the past year our maintenance charges have been too high and made the expansion of our export trade almost impossible; they will, if increased, act disastrously upon exports. Although there is a great demand for our goods in the world's markets, and although the exchange rate favors our export trade, business is not likely to come to any further development. The cause, among others, is the high wage, the demands for still higher wages and for shorter hours. The German workman cannot complain that he is worse off than his colleague in England and America. He is better paid, relatively, than the American, who has, besides, been compelled to accept lower wages. But while the outside world is seeking to maintain its place in competition, by lowering wages, the German shops are being operated on a steadily rising scale of costs. There is no doubt that the absolute ruin of our export trade will result."

The foregoing statement can be confirmed by the writer's own observation. Despite the cry of poverty the working classes in Germany — men, women, and children — at least *look* prosperous; they generally appear well clothed, well fed and well satisfied — in these respects being in marked contrast to the British working classes.

Economic Suicide

Hume's dictum in his Philosophical Essays, that the "prosperity of one nation commonly promotes the prosperity of all its neighbors," is worth recalling at this time. The converse of this proposition, or that the prosperity of a nation depends upon the ruin and degradation of its neighbors, was as popular in Hume's day as it is now, and he called it the "narrow and malignant doctrine". In Europe this doctrine would seem to be becoming an unpleasantly familiar type of character. A really sound, business-like and economic policy may almost be said to be the exception rather than the rule in these days of tumultuous revolt against all fixed conditions. It seems impossible to satisfy either the French or Germans by any means short of changing the whole order of nature and economics for their benefit. As things are nothing contents them; the keynote which would put them in harmony with existing conditions, or make them ready to bear the disagreeable burdens which they are obliged to carry has yet to be found. If the mark goes down there is a howl throughout Germany, and the main desire of the Germans is to make other nations pay for the misfortune. Of course other exchanges suffer, but what is more, the tariffs of the various nations, great and small, are upset, and with the fall of the mark the causes of business depression are multiplied indefinitely, and where Germany is out of harmony with one country she is again in discord with twenty. The Germans know all this well enough, without doing much to help themselves. Indeed it is easy to find in the trade journals the belief that high tariffs, high wages, and trade jealousies are producing the self-destruction of Europe.—Die Textil-Woche, June 28, 1922.

Prices of Paper Pulp in Germany

The Price Committee of the German Wood Pulp Industry has fixed the price of ground wood for July at 940 marks per 100 kilos (approximately $4.00 per cord.—Ed.) f.o.b. mill.—Pappen-und Helzstoff-Zeitung, July 7, 1922.

Russian Timber Trade

The export of wood from Russia has now been put on a "real and practical basis," according to the Industrie und Handels-zeitung of July 7. The Economic Institute for Russia and the Border States recently established at Konigsberg, is supporting the Russian and German firms engaged in the timber trade. A section of the Institute, called the Forests Products Section, is charged with the task of arranging the different questions of the trade between Russia and Germany, supplying the former country with technical material and workers skilled in the various branches of the industry. To further promote trade in timber, a new journal is shortly to be published in Russian and German, with the title, the "East Prussian Wood Market". Evidently the first great step is taken in exploiting the immense forest resources of Russia.

APPRECIATE THE CHEMIST

At the first annual meeting of the Société de Chimie Industrielle, held in Paris last October, Georges Claude whose work in connection with the liquid air industry is too well known to require description, talked on "The Aplication of Scientific Research to Industry and the Synthesis of Ammonia."

Referring to the duties of industrial concerns towards Science, he said:

"And first of all I would like to state my opinion quite frankly to those companies which make use of the applications of science — and at the present day they comprise nearly all industrial concerns. No doubt these organizations have laboratories, which, in some cases, are most generously endowed, but they are merely for the satisfaction of their own personal requirements. Pure science, which is the origin of all progress, possesses little or no interest for them; nor do they care about the training of research scientists.

"Yet, it is undeniable that these companies are to the very highest degree benefitted by the progress of science. No matter how original a process may be, it is the outcome of the general advancement of science and follows, directly or indirectly, from innumerable pieces of work, most of which were disinterested. Thus, these companies benefit to a very considerable extent by work which did not bring a cent to their authors, and then calmly forget all about it. This is a little too convenient!

"Hence, just as it is equitable — and profitable — to have workmen participate in profits, and to give the technicians a share in the progress which they have brought about, so it is but just that a small proportion of the profits should be devoted to helping out laboratories."

A Dictionary of Pulp and Paper Mill Terms

(Continued from last issue.)

U

U. Frame. A frame, shaped like the letter U, that supports the breast roll bearings on a Pusey and Jones paper machine shake.

Ultramarine. A double silicate of sodium and aluminum, prepared by fusing kaolin, sodium sulphate and charcoal in a crucible and roasting the green substance with sulphur. The blue mass formed is dried and powdered and sold as ultramarine. Generally the term is used for a characteristic blue shade, but there are ultramarine greens and reds. Barium chromate is sometimes called ultramarine yellow.

Umber. A brown earth pigment owing its shade to oxides of iron, See **Ochre.**

Umpherston Beater. A beater in which floor space is saved by circulation of the stock under the back fall and bedplate, returning the stock upwards to the face of the roll. From the designer.

Ungerer's Process. A modification of the sulphate process in which the liquors are exhausted by using them in a series of digestors. Repair costs militated against its success.

Union. A pipe fitting having a packing box with a movable threaded portion parallel to the axis of the pipe, setting up against the packing box, permitting the separation of pipes in a system, without cutting the pipes.

Unit Weight Test. A form of test that gives the result of 32 Ashcroft or Mullen tests on pulp, divided by twice the weight of the four sheets used.

Units of Heat. See **Thermal Units.**

Unsized Paper. See **Blotting and Waterleaf.**

Upper Case. Capital letters.

Upsetting.
(1) Spreading the teeth of a saw.
(2) Thickening rods or shafts by hammering, usually done to enlarge the ends.

V

Vacuum. The absence of air or other gases. A perfect vacuum cannot be obtained, owing to the porosity of even the densest material used as a container and the imperfection of exhausting devices. Degrees of vacuum conditions are indicated by liquids in U. shaped tubes called manometers and are generally given as inches of water or millimeters of mercury.

Vandyke Brown. A pigment of the ochre class containing organic matter, such as peat or bitumen.

Variable Speed Devices. These are of several forms. Belts running on cone-shaped pulleys, and chains running in adjustable V-shaped openings between convex discs, are two such cases.

Vascular Bundles. The strands of the stems and leaves of plants, the conducting media for sap.

Vat. A trough, tub or tank in which processes are carried on in a liquid medium. Hand-made papers are called "vat" papers because the mold is dipped into the vat containing the prepared stock.

Vat Dyes. Insoluble dyestuffs which require to be reduced and dissolve in alkaline liquors. Indigo is an example, also indanthrene.

Vegetable Gum. See **Dextirn.**

Vegetable Parchment. See **Parchment.**

Vellum. A thick writing paper somewhat resembling real vellum or prepared calfskin in appearance, made from high-class rags, which have been subjected to long beating, or chemical treatment.

Veneer. Thin pulp or fiber boards suitably colored and highly glazed. Used as the name implies.

Venetian Red. A native ochre of varying shades of red. Artificial varieties are also prepared from iron sulphate. It is used for coloring paper, principally wrappers and boards.

Vesuvius Burner. A vertical stationary sulphur burner with a melting pan or kettle on the top, from which sulphur is fed to trays, disposed in a vertical series while air is supplied at the front of each.

Vinegar. See **Acetic Acid.**

Viscose. A form of cellulose obtained by treatment of cellulose with alkali and solution in carbon bisulphide.

Viscosity. The property of a liquid whereby it resists deformation. The speed of a liquid passing from an orifice depends among other conditions on its viscosity.

Vitriol. Called, also, oil of vitriol. See **Sulphuric Acid.**

Vitriols. Blue = Sulphate of Copper. Green = Sulphate of Iron. White Sulphate of Zinc.

Volatile. Having the property of evaporation. Water, gasoline, alcohol, ammonium chloride, etc, are volatile.

Volt. The unit of electromotive force. It is the force which produces a current of one ampere against a resistance of one **ohm.**

Volume Composition. The components of a sheet of paper given in terms of the volume they occupy.

Volumetric Analysis. The use of measured reagents in solutions of known strength to determine qualities of other reagents in measured solutions of unknown strength. The testing of cooking liquors is an example.

Vulcanizing. Paper or boards treated superficially with a strong solution of zinc chloride and thereby rendered very hard and waterproof. Sheets pressed together when wet to form a compact mass. Rubber is vulcanized by treating it with sulphur under high temperature and pressure.

W

Washer. See **Drum Washer.**

Washer Trough. A small trough through which the deckle strap passes and is subjected to a cleansing jet of water.

Washing Soda. See **Sodium Carbonate.**

Waste Liquor. The spent cooking liquor discharged from a sulphite mill.

Water. A compound of hydrogen and oxygen containing two atoms of hydrogen and one atom of oxygen in its molecule and has, therefore, the formula H_2O wtih the molecular weight of 18.016.

Water-Finished. Paper highly glazed by the action of the heated calender on the surface of the paper, which has been moistened just before entering the stock.

Water Glass. See **Sodium Silicate.**

Waterleaf. The term applied to sheets of hand-made paper or machine-made paper before being sized, or which are not sized.

Water-Marked. Any paper containing a water-mark, or distinct design in the fabric, produced by the raised pattern on a mold or a dandy roll previous to pressing. Some of the earlier watermarks are called to mind in the terms used for certain sizes of paper, as foolscap, pott, hand, royal crown, etc. A simulated watermark or "press mark" is produced by pressing a design by means of type or a feet carrying a pattern just before the paper is dried.

Waterproof. Various sorts: roofing and tar papers, parchments and oiled papers. Special qualities prepared by soaking paper in a solution of shellac, with or without borax.

Watt. The unit of electric power. It is the energy produced by a current of one ampere under a potential difference of one volt. Watts, therefore, equal Volts Amperes. One horsepower = 746 watts.

Waxed Tissues. Tissues impregnated with paraffin wax. Used for stencils, cyclostyle work, confectionery, bread and fruit wrappers.

Weak Acid. The acid prepared in the second tower of the two tower system; it only contains the excess gases from the first tower. It is pumped as a supply to the first tower.

Web. The sheet of paper coming from the machine in its full width.

Wedding Bristol. A term employed to denote a class of high-grade papers cardboards, of heavy weight and medium smooth finish, used for wedding and social anouncements, cards, etc.

Wedge Furnace. A vertical furnace for burning pyrites as a source of sulphur dioxide in sulphite mills or in the manufacture of sulphuric acid. The mineral is fed in at the top and is raked in succession over a series of superimposed trays, by moving arms.

Weir. A barrier placed in a stream to raise its level and used to measure the flow.

Wet and Dry Bulb Hygrometer. See **Hygrometer.**

Wet End. The part of a paper machine upon which the stock is formed into a sheet. It includes, in a fourdrinier machine, the flow box, apron, pond, slices, table rolls, wire, dickle straps, breast roll, couch roll and presses. In a cylinder machine it includes the vats, cylinders couches, primary presses, etc. In both cases it is all that portion up to the first dryer.

Wet Lap. The folded sheet obtained by cutting the sheet of pulp off a wet machine press roll and doubling it to convenient shape.

Wet Machine. A machine used to form sheets of pulp which are not to be dried or of paper to be air dried. Water is removed by pressure between two rolls after the sheet is formed on a cylinder mould and taken off by a couch roll to the felt of the machine. The pulp or paper is allowed too accumulate on the upper press roll until of sufficient thickness, when it is cut off.

Wet Press. Equivalent to wet machine, which see.

Whatman's. A celebrated high-class drawing paper named after the original maker, one of the earlier pioneers of paper-making, J. Whatman, who established a mill at Maidstone, England, 1760. Also applied to filter papers of certain qualities made in England.

White Iron Pyrites. See **Marcasite.**

White Light. Light in which all the colors of the spectrum are present in their proper positions.

White Liquor. The clear solution prepared for cooking soda or sulphate pulp.

White Paper. Printers call all unprinted paper white whether colored or not.

White Vitriol. See **Vitriols.**

White Water. Returned water from pulp thickeners, used to supply grinders, sliver screens or in other ways whereby its chance content of fibre is largely saved. See, also, **Back water.** So called from the color, which is due to finely divided material held in suspension.

Wild. A mottled appearance in paper, due to many causes sometimes to over freeness or excessive suction at first suction box.

Willesden. Paper impregnated or surfaced with an ammoniacal solution of cupric oxide, which, acting upon the fiber renders it partly gelatinous and imparts the quality of imperviousness to water.

Willowing Machine or Willow. A machine for removing dust or dirt from stocks, such as rags, straw, esparto. See **Duster, Thrasher.**

Winder. The means of rolling the paper to finished sizes at the end of the paper machine. To be distinguished from reels which take the continuous sheet from the dryers. See **Reels.**

Wire. See **Paper Machine.**

Wire Mark. The impression of the fourdrinier wire on the underside of the paper.

Wood Alcohol or Wood Spirit. A product of the destructive distillation of wood Methyl alcohol, c. f. now legally called Methanol in the United States and Methyl Hydrate in Canada.

Wood Naphtha. Wood alcohol.

Wood Pulp. A general term for paper made from wood pulp. Qualities numerous.

Woods Metal. A fusible alloy melting at 158°F. consisting of Tin, 4 parts: Lead 8 parts; Bismuth 15 parts; and Cadmium, 4 parts. This or similar metals are used in automatic sprinklers.

Wood Vinegar. Crude acetic acid from the distillation of wood.

Wool Fat. Lanoline, sometimes used in lubricants. A by product in the washing of wool. It is readily emulsified.

Worm Gears. A means of imparting motion to toothed wheels by means of a screw cut on the bay of a shaft or a small sleeve shrunk onto the shaft. Usually imparts motion at right angles.

Worm Knotter. A device for removing knots and hard chips from pulp after cooking. It consists of a spiral conveyor either stationary in a revolving cylinder or revolving in a stationary cylinder into which the pulp is pumped passing out through the screen wire sides of the cylinder and leaving knots or chips to be thrown out by the motion of the conveyor.

Worm Wheel. A toothed wheel specially cut to engage a worm gear.

Wove. A term applied to paper made with a woven dandy in which the wires cross and recross at even distances apart in a manner quite distinct from laid wires.

Wrapping Papers. Under the neads of bag, biscuit caps, browns, caps, carbolic, casing, cork, corrugated, cutlery, drapers, fruit, grocery, hosiery, kraft, parchment, rocket, royal hand, sealings, shops, skips, small, hands, sulphite browns, cartridge, tobacco papers. See also under Sizes of Paper.

X, Y, Z.

X. The term used in mathematics to indicate an unknown quantity.

Xanthates. Compounds of the alkalies; e. g., sodium with xanthogenic acid. These reactions form the basis of viscose sizing, which is a method of precipitating cellulose from the sodium compound in the beater.

Xylem. The term applied in botany to the wood of plants.

Xylonite. A compound prepared from cellulose nitrate, capable of being moulded or turned for ornamental or art products.

Xylose. One of the pentoses or five-carbon sugers. It does not undergo alcoholic fermentation. It is a product of the hydrolysis of wood gums.

Yankee Machine. A fourdrinier machine for light-weight papers having only one — but very large — dryer. It produces a sheet that is smooth on one side and rough on the other. See **Machine Glazed M. A.**

Yaryan Evaporator. A multiple effect evaporator. From its designer.

Yellow Chrome. Chromate of lead.

Yellow Ochre. A pigment consisting of ferric oxide with clay matter.

Yellow Prussiate of Potash. Ferrocyanide of potash.

Yellow Wove. A printer's term for a cheap blue paper.

Yield. The amount of paper or pulp obtained from its raw material, as in pounds per cord, tons per digester, pound of paper per ton of stock, etc.

Zacaton. A Mexican grass of fair promise as a source of paper making fiber.

Zaremba. A form of multiple effect evaporator. From its designer.

Zea Mays. Indian corn — maize. Maize straw is a possible source of paper-making material.

Zeolites. Hydrous silicates of alumina and the alkalies, Artificial zeolites are used in connection with water softening.

Zinc Chloride. A salt $ZnCl_2$ which, when concentrated, has a marked hydrolizing or solvent action on cellulose, which dissolves in a solution of zinc chloride in twice its weight of 35 per cent. hydrochloric acid. Zinc chloride is Solution A of Herzbberg's stain for microscopical examination of paper, which see.

Zinc Dust. Finely divided zinc which has a strong reducing action. It is used in examining dyestuffs. It is readily inflammable.

Zinc Sulphate. White vitriol.

This dictionary will be concluded in the next issue, with sizes of paper and corrections and additions. The whole will be re-printed in book form.

Meaning of "Ex Dock" in Delivery Contracts

By A. J. WOLFE, Chief, Division of Commercial Laws in U. S. Commerce Reports

The use of conventional terms in domestic and foreign commerce is very common, well-nigh universal. It is intended to save time and is generally based upon usage. Yet back of the term so used there may lurk a lack of accord between two parties to a contract. A manufacturer may quote f.o.b. New York and his English customer may have a different view of what f.o.b. implies. Both may be right in their own mind, but courts in England and in the United States may have divergent views as to the meaning of the term in a particular contract, or rather as to the various rights and obligations arising from the use of the term in the contract form.

Under the circumstances it is very unwise to employ even the commonest terms and abbreviations without determining the standard of definitions on which they are based. (At the Congress of the International Chamber of Commerce in London in May, 1920, there developed the greatest differences of opinion as to the meaning of the expression "c. i. f." with regard to the rights and obligations of the buyer and of the seller.) If the expression "c. i. f." is used without such reference, then in the case of litigation the courts of the country where suit is brought will decide in accordance with prevailing judicial rulings. But when an American exporter quotes "c. i. f.," in accordance with term definitions adopted by American exporting organizations," then without doubt the acceptance of this quotation will bind the buyer anywhere in the world to these definitions.

A question was recently submitted to the Division of Commercial Laws with regard to the meaning of the quotation "ex dock, Boston," the point being raised whether the buyer or the seller has to bear the wharfage charges. Properly this point might have been specifically dealt with in a separate contract clause; but, lacking this, the division obtained the opinion of a well-informed admiralty-law firm, which is given below as of considerable interest:

The Weight of Local Custom

In general, the courts recognize commercial terms of this kind upon the basis of their common acceptation and do not admit parol evidence of usage and the like in support of a different interpretation. In the case of Royal Italian Government *v.* National Brass and Copper Tube Co., (not yet reported) recently decided in the United States district court, the plaintiff offered evidence of a local usage in support of the contention that delivery of shipments on the dock was sufficient to pass title under a sale "f. a. s. Baltimore." Judge Learned Hand, in giving judgment for the defendant, said:

"I think that this evidence, even if uncontradicted, would not be enough. The consignee would naturally be the one to give the orders for the subsequent movement of the goods because he would know when his ship was ready. That would not involve his acceptance of title from the seller but would be a nearly inevitable course from general convenience. I think that the proof which in the case of a custom should be clear is not sufficient.

"Moreover, the courts have treated the similar phrases, 'f.o.b.' and 'taken from alongside,' so far as I have found, as not open to interpretation by custom. (Silberman *v.* Clark, 90 N. Y. 522; Hirsch *v.* Georgia Iron and Coal Co., 169 Fed. R. 578 (C. C. A. 6th); Turnbull *v.* Citizens' Bank, 16 Fed. R. 145; Chandler Lumber Co. *v.* Rodks, 136 Wis. 495). It is, indeed, hard to know in what cases the evidence of custom will be accepted and when it will be rejected. The cases scarcely admit of the easy distinction so often given between what contradicts and what does not contradict the terms of the contract, and I should have been disposed to think that such a phrase might be subject to local custom. Since, however, the cases having decided otherwise, I should not feel free to disregard them."

In the case of Chandler Lumber Co. *v.* Rodks (136 Wis. 495) referred to by Judge Hand, the plaintiff offered evidence to prove a usage under which the purchaser was required to assume payment of freight under a contract calling for delivery " f. o. b. cars Madison, Wis." The court said:

"The expression 'free on board' in a contract like this is not ambiguous, and therefore not open to construction either by proof of custom or otherwise. 'Free on board cars, Madison,' means that the plaintiff, in order to perform its contract, must deliver the lumber on board cars at Madison, Wis., free, to be taken by the purchaser without any obstruction, burden, or impediment."

Dictionary Definition of Phrases

In view of these decisions, considerable importance attaches to such aid as may be obtained from the dictionaries. In this connection, we note the following definitions in Funk and Wagnalls New Standard Dicionary (1916):

"Ex." (prep.). 3. Commerce. Free out of; not subject to charge until taken out of, as ex elevator, ex ship, ex store, etc. (Vol. I, p. 867.)

"Ex ship" (com.), same as "free overside." (Vol. II, p. 2257.)

"Free overside" (com.) exempt from charges until unloaded from a vessel. (Vol. I, p. 928.)

"Ex store" (U. S.), without free delivery from or after leaving the store. Compare "ex elevator." (Vol. II, p. 2390.)

"Ex elevator" (com.), out of elevator; subject to no dues or charges except such as may arise afer leaving the elevator; said of grain so purchased. (Vol. I, p. 804.)

In Words and Phrases, second series, volume 2, page 362, we note the following:

"*Ex ship.*" — The term 'ex ship' as used in a contract for the purchase of a commodity setting the price at so much 'ex ship' does not contemplate a shipment by a particular ship, and simply denotes that the property in the goods shall pass to the buyer upon their leaving the ship's tackle, and that he shall be liable for all subsequent charges of landing them, and does not constitute a condition of the contract but is inserted for the benefit of the seller. Harrison *v.* Fortlage, 161 U. S. 57.

In the light of these definitions, we think that the words "ex dock" in a contract of sale imply that title to the goods shall pass only upon their removal from the dock by the buyer and that the seller is accordingly liable for the wharfage charges.

The foregoing, of course, might be subject to qualification in a case where the seller places the goods upon the dock at the disposal of the buyer and the buyer declines to take delivery in accordance with the contract stipulation. Where no definite time for delivery is specified by the contract, it would ordinarily be implied that the buyer would take delivery within a reasonable time; and if proper notice to remove the goods were given to the buyer by the seller we think that the seller would be entitled to look to the buyer for subsequent wharfage charges or other expense arising from the buyer's default.

Interpretation of C. I. F.

A distinction might also arise in connection with c. i. f. contracts. It has been held in New York, Pennsylvania, and some other jurisdictions that under such contracts title passes to the buyer upon transfer of documents, even though it be stated in the contract that delivery is to be made at destination. See the contract that delivery is to be made at destination. See Smith Co. (Ltd.) *v.* Moscahlades (193 A. D. 126) and cases collected at pages 129 and 130.

We have been unable to find any local law or usage in Massachusetts which would indicate that the phrase "ex dock" is used in any special or peculiar sense at the port of Boston.

PROGRESS AT PORT ARTHUR

The new book paper mill of the Provincial Paper Mills at Port Arthur is making very satisfactory progress. Construction has proceeded without any hitch and portions of the roof are now in place.

If you believe a thing don't be ashamed to tell the world about it.

Technical Section

NEW JOURNALS FROM WHICH ABSTRACTS HAVE BEEN PREPARED FOR THIS ISSUE

Bull. Agric. Congo Belge—**Bulletin Agricole du Congo Belge.** Direction (Agriculture) du Ministère des Colonies, 7 rue Thérésienne, Brussels, Belgium.

Bull. Imp. Inst.—Bulletin of the Imperial Institute. John Murray, Albemarle St., W., London, England.

Chem. Abs.— Chemical Abstract. Charles L. Parsons, 1709 G. St., N. W., Washington, D. C.

J. Chem. Ind. (Japan)— Journal of Chemical Industry (Japan). T. Maki, Kogyo-Kwagaku-kwai, Iidamachi, Kojimachiku, Tokyo, Japan.

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Product

A-1 A-3 Incrusting Substances of Plants. II. E. SCHMIDT and F. DUYSEN. **Ber.**, liv, 3241-3244, (1921); **J. Soc. Chem. Ind.**, xli, 94A, (Feb. 15, 1922). The removal of incrusting substances is effected more conveniently by a solution of chlorine dioxide in 50 per cent. acetic acid than by alternate treatment with chlorine dioxide and sodium sulphite; the method has the advantage that the attacked incrustations remain dissolved in the acid. After this treatment, the presence in the tissues of polysaccharides which give a blue coloration can be ascertained by means of zinc chloride-iodine solution which gives only unreliable results in the presence of incrustations. The simplicity of the manipulations and the stability of the solutions render the chlorine dioxide acetic acid mixture valuable for microchemical investigations. The reagent causes the cell walls to swell somewhat but this action occurs so uniformly that the structural features of the plant tissues are not altered thereby. -A. P. -C.

A-1 West African Corkwood. Bull. Imp. Inst., xix, 10-13, (1921); **Chem. Abs.**, xv, 3554, (Oct. 20, 1921). The tree yielding the corkwood was the **Musanga Smithii** ("umbrella tree"). The wood contained 8.8 per cent. moisture, 0.6 per cent. ash, and 51.5 per cent. cellulose, and when treated with 20 per cent. caustic soda for 8 hours at 160 degrees the yield of dry pulp was 50 per cent. It is a promising material as a source of paper pulp. A. P. -C.

A-1 B-4 New Zealand Waste Timber for Paper Making. Bull. Imp. Inst., xix, 1-10 ,(1921); **Chem. Abs.**, xv, 3554, (Oct. 20, 1921). Results of the examination of eight New Zealand woods show that four species of **Fagus (Nothofagus)** yielded pulps of similar character which bleached readily and furnished fairly strong papers of good quality. The yields of pulp were 41.5 to 44.0 per cent. that from **F. fusca** being the best. The **Beilschmiedia Tawa** gave a yield of 42.5 per cent. of pulp yielded paper of similar quality to that obtained from the species of **Fagus.** The **Weimannia racemosa** wood gave a rather low yield of pulp (36.5 per cent.) which, however, bleached satisfactorily and had good felting qualities. The strongest papers were obtained from the woods of **Pinus laricio** and **Pinus radiata** but the pulps from these woods did not bleach quite as readily as those from the other six samples. The yield of pulp was only fair (39 per cent.). -A. P. -C.

A-3 Papyrus as a Paper Making Material. L. VIDAL and M. ARIBERT. **L'Agronomie Coloniale**, vi, 53, (1921); **Chem. Abs.**, xv, 3554, (Oct. 20, 1921). The air-dry stems contained 15 per cent. moisture and yielded 47 per cent. cellulose, 2 per cent. ash, 3.4 per cent fatty substances and 4.3 per cent. water soluble matter. The material after treatment with steam at 1 to 2 atmospheres was heated with 13 per cent. caustic soda of 6° Beaumé strength for 6.5 hours. The yiled of pulp was 40 per cent. and it could be easily bleached. Paper made from the pulp was of very good quality. -A. P. -C.

A-3 Commercial Utilization of Cotton Stalks. Bull. Imp. Inst., xix, 13-18, (1921); **Chem. Abs.**, xv, 3554, (Oct. 20, 1921). Cotton stalks from the Punjab and Central Provinces, India, were examined with the following results: moisture 10.2 and 10.7 per cent; cellulose 44.1 and 40.3; ash 2.6 and 3.0, respectively. These stalks, treated with caustic soda under conditions similar to those employed in the manufacture of paper on a commercial scale, yielded 41 and 34 per cent. of dry pulp, respectively. A paper pulp of fair quality which could be bleached to a pale cream tint resulted. The dry distillation was also investigated. -A. P. -C.

A-3 Treatment of Vegetable Fibers. U. S. A. Patent 1,410,069, CHARLES MORIONDI, assignor to SOCIETE ANONYME DES BREVETS PEUFAILLIT, March 21, 1922. Same as Can. Patent 209,491, March 13, 1921. See this Journal, xix, 1100, Oct. 27, 1921. -A.P. -C.

A-3 Production of Cellulose from Vegetable Matter. U. S. A. Patent 1,402,210, G. J. BUSTAMANTE, Jan. 3, 1922. Same as Can. Patent No. 208,927. See this journal, xix, 1076, Oct. 20, 1921. -A. P. -C.

A-3 Production of Power Alcohol and Paper Pulp from Megasse (Bagasse). G. J. FOWLER and B. BANNERJEE. **J. Indian Inst. Sci.**, iv, 241-260, (1921); **J. Soc. Chem. Ind.**, xli, 227A, (March 31, 1922). Megasse was subjected to acid hydrolysis under varying conditions of time, pressure, quantity and concentration of acid, with the object of obtaining a high yield of fermentible sugars without rendering the residual fiber unsuited for paper making. Under the best conditions 60 per cent of the theoretical yield of alcohol was obtained, equivalent to 8 to 9 per cent. alcohol on the weight of megasse. The fibrous residue, amounting to about 52 per cent. of the original material, can be treated by the soda process, and could be used for wrapping papers, boards, etc., or in admixture with rag pulp. -A. P. -C.

A-13 Testing Dyes for Colored Papers. B.K. STEADMAN. **China Clay Trade Rev.** iii, No. 29, (Oct. 1921). See this journal xix, 722, A-13, July 7, 1921. -A.P.-C.

A-15 The Action of Iodine upon Cellulose, Silk and Wool. J. HUEBNER and J. N. SINHA. **J. Soc. Chem. Ind.**, xli, 93-94T, (March 31, 1922). The authors have investigated the action of dilute solutions of iodine and potassium iodine in water on highly purified celluloses obtained from different kinds of wood, esparto, and other raw materials. Cellulose from poplar wood rapidly decolorized the iodine solution; and at the same time a pronounced odor of iodoform was developed. All the other celluloses behaved similarly, but the intensity of the odor varied and in every case was less pronounced than in that of poplar cellulose. On steam-distilling poplar pulp to which iodine and caustic soda had been added, pure iodoform was obtained. Similar results were obtained with other celluloses, natural silk, some of the artificial silks, wool, rubber, and other substances. The amount of iodoform produced seems to bear same definite relationship to the solubility of the different celluloses in caustic soda. The authors have obtained bromoform from cellulose and hope to succeed in getting chloroform. -A. P. -C.

A-15 Effect of Water and of Certain Organic Salts Upon Celluloses. J. HUEBNER and F. KAYE. **J. Soc. Chem. Ind.**, xli, 94T, (March 31, 1922). Highly purified cotton or other cellulose when exposed to the action of water at a temperature of about 35 degrees for a considerable time yields soluble compounds which are aldehydic in character; and if the celluloses are subjected to steam distillation the distillate contains aldehydic substances. -A. P. -C.

A-15 Identity of the Cellulose of Different Plant Materials. E. HEUSER and E. BOEDEKER. **Z. angew. Chem.**, xxxiv, Aufsatzteil, 461-464, (1921). Abridged translation by C. J. West in **Paper Trade J.**, lxxiv, No. 5, 47-48, (Feb. 2, 1922). Contrary to the views of earlier writers, the authors propose that there is only one cellulose, from whatever source derived, and that it is represented by the formula $(C_6H_{10}O_5)n$. The identity of straw and cotton cellulose has been established and it is now shown that wood cellulose is identical with these two. Bleached wood pulp was freed of resin and fat by extraction with benzene and alcohol, and then extracted thrice with boiling 6 per cent. caustic soda (or with 17 per cent. in the cold), whereby the pentosan content was decreased from 4.06 to 1.92 per cent. At the same time the ash content was reduced from 0.52 to 0.40 and the copper number from 4.10 to from 0.8 to 0.9. Thus, the principal impurity is the pentosan content. This can be nearly completely removed by repeated extraction so that a substance finally remains with the formula $(C_6H_{10}O_5)n$. Upon hydrolysis by means of concentrated hydrochloric acid, the maximum dextrose reading was obtained in 16.5 hours. 94.2 per cent. of dextrose was actually isolated from the hydrolysis product and identified as the osazone. Comparative experiments were carried out with cotton cellulose, with similar results. -A. P. -C.

A-15 Relationship of Levo-Glucosan to Dextro-Glucose and to Cellulose. J. C. IRVINE and J. W. H. OLDHAM. **Chem. Soc. Trans.**, cxix, 1744-1759, (1921). Levoglucosan is shown to be 1.6. beta-glucose anhydride and hence may be termed beta-glucosan. There is no structural relationship between cellulose and beta-glucosan. By the identity of the methylated glucose derived from trimethylcellulose with that from cellobiose it is shown that the cellobiose residue is an integral part of the cellulose molecule. -A. P. -C.

A-16 Simple Method of Analyzing Bearing Metals and Similar Alloys. G. OESTERHELD and P. HONEGGER. **Helv. Chim. Acta**, ii, 938-416, (1919); **Chem. Soc. Abs.**, cxvi, Pt. 2, 478-479, (1919). The principles on which the method described is based are as follows. The alloy is dissolved in boiling concentrated sulphuric acid, dissolution being complete in a few minutes even with an alloy rich in lead. The antimony passes quantitatively into solution in the trivalent form and the tin as stannic sulphate. The copper and lead are converted entirely into copper and lead sulphates, subsequent solution with water resulting in the separation of a crystalline lead sulphate, which is readily removed by filtration through a Gooch crucible. In the filtrate the antimony is titrated directly with potassium bromate, the titrate solution being then reduced and the tin, and afterwards the copper, being determined volumetrically. In the presence of tin, antimony, and lead, copper may be estimated in a few minutes by a simplified form of electrometric titration with sodium thiosulphate. -A. P. -C.

B. — Forestry

B-4 New Zealand Waste Timber for Paper Making. See A-1.

B-4 Note on a Stand of Parasol Trees in the Neighborhood of Ganda-Sundi. M. GOOSSENS. **Bull. Agric. Congo Belge**, xi, 74-79, (1920); **Botan Abs.**, ix, 191, (Oct. 1921). The parasol tree **(Musanga Smithii)** grows very readily in forest clearings and abandoned plantations. Various uses for it are suggested. It is particularly suited as a raw material for paper making and would probably prove remunerative if cultivated for this purpose. A. P. -C.

B-4; C-2 Tanning Material from Spruce Bark. Can. patent No. 188, 352, S. SAXE New York City, N. Y., U. S. A., Jan. 21, 1919. The soluble material is extracted from the spruce bark, dried, and heated to a temperature of 215-220°F. It is thus relatively free from the soluble colloid non-tans normal to spruce bark. -A. P. C.

B-5 Tree-Felling Saw. U. S. A. Patent 1,414,319, A. ZAIAUSKIS, April 25, 1922. The patent covers a power-driven horizontal circular saw. A clutch mechanism makes the saw advance or recede and an automatic control is provided for throwing out the clutch when the cut is nearly completed. A spring-pressed pusher is provided to press against the tree and start the fall when the cut has been made sufficiently deep. -A. P. -C.

B-5 B-0 Hoisting Apparatus for Raising Sunken Logs. U. S. A. Patent 1,406, 714, A. J. ZIPP, Feb. 14, 1922. Two scows are rigidly connected together, with a suitable space between them. A hoisting drum is mounted on these scows so as to be over the open space and is driven from the engine driving the scows. The logging grapples described in U. S. A. Patent 1,266,650 of May 21, 1918 are used to catch the logs. -A. P. -C.

B-9 Timber Miners or Timber Farmers? EDWARD RICHARDS. **The Nation; Pulp and Paper**, xx, 195-196, (March 16, 1922). A brief discussion of the urgent necessity for carrying out lumbering operations in such a manner that forest lands will be left in a productive condition; i.e., lumbering should be carried out as a harvesting operation, not as a mining operation. -A. P. -C.

B-9 Washington as a Source of Pulp Wood. ANDREW LIND. **Pulp and Paper**, xx, 219-220, (March 23, 1922). An analysis of the sources of pulp wood within the State of Washington, showing that there is sufficient pulp wood in the Gray's Harbor-Puget Sound region to produce 300,000 tons of pulp annually for an indefinite period. -A. P. -C.

B-9 Report of the Norwegian Forest Service. Indeberet. Norske Skogv., 1919: 1-130; **Botan. Abs.**, ix, 188, (Oct. 1921). A very complete and comprehensive report of the Director for the calendar year 1919 is presented, setting forth all forest activities in the different districts. -A. P. -C.

D. — Groundwood Manufacturing and Equipment

D-0 H-5 Bleached Groundwood. A. O. BRAGG. **Paper**, xxx, No. 8, 7-10, (April 26, 1922). Notes on the grinding conditions required for the production of groundwood to be bleached, the method of applying the bisulphite solution, the precautions which must be taken, the effects of excess bleach, the necessity for control of the bleach liquor, and the method of bleaching purchased pulp. -A. P. -C.

H. — Bleaching, Bleach Manufacturing and Equipment

H-4 Electrolytic Manufacutre of Caustic Soda by the Bell Process. M. YASUDA. **J. Chem. Ind. (Japan)**,

(Continued on page 680)

WILL AUSTRALIAN TARIFF BENEFIT BRITISH PAPER?

(From Our London Correspondent)
(London, July 24, 1922)

Comments on the Australian tariff in favor of British Newsprint have recently fallen very flat. But the subject has again been revived owing to some of the London scribes ventilating views that the traiff would materially benefit the British mills. The subject has been taken up by C. W. Clarke, of "The Daily Telegraph", Launcestor, Tasmania, whose letter has been received anl published in London during the last few days. I am quoting part of this letter as it is of extreme importance to Canadians, who I hope have not allowed this question of a preferential tariff to receive a "go-by." I have always felt that an injustice was done to Canada and the subject should be thrashed out.

Mr. Clarke says, inter alia, the statement that British mills had received an impetus in order to cope with increased business, through the tariff, may seem to be perfectly logical and sound. "Unfortunately, however," he adds, "until a few days ago it was impossible to obtain a quotation for British newsprint at a landed cost that showed to the Australian consumer the advantage expected by reason of the paper being duty free. In our own case we have been able to buy Canadian paper and Norwegian paper, all of which is subject to the £3 per ton duty, at a less landed cost per ton than British newsprint duty free."

"We have been going into newsprint prices very closely during the past 8 or 9 months and in every case, until a few days ago, British newsprint came second best in point of price, landed on our own wharf. The quotation given us by a well-known Australian firm of merchants, acting as agents for a British mill, received about a week ago, was the first received that showed any advantage but even this advantage does not amount to anything approaching £3 per ton, or half of that amount."

Australian Price Lowered by Freight Cut

"One explanation of this improved state of affairs with regard to quotations for British newsprint on the Australian market was given to us by a paper man only yesterday, (May 24, 1922), The explanation in part being that, whereas British steamship companies previously insisted upon a freight charge of £4 per ton measurement, which means £8 per ton dead weight, this freight weight was recently reduced first of all to £4 per ton dead weight and now is to £3-10s per ton dead weight, this lower freight having the effect of closer competition with the freight existing between Australian ports and Norwegian ports by the direct lines trading between the two countries."

"It would thus seem that at last there is a likelihood of more British newsprint coming into the Australian market, but it will require very close attention to the actual needs in point of weight and color of the paper used, and the most economical means of production, so that the price at mill is further reduced, in order that the Australian newsprint consumer should receive the greatest possible benefit out of the tariff preference."

The writer goes on to criticize some of the arguments submitted in favor of British mills and says the "conditions are far from being an absolute fact," as prevailing in Australia.

By the foregoing letter, Canadians will be able to judge how they stand in regard to Australian market. After all the trade between England and Australia has not jumped so much during the past six months. The figures to the end of June 30 last were 196,069 cwts., compared with 166,261 cwts., for the first six months of the depressed period in 1921. Canadian figures will show how trade is moving between the Dominion and Australia.

In the July 6 number of the "Pulp and Paper Magazine" (page 574) there appears a synopsis of a report made by the Royal Bank of Canada which states". . . . The Australian buyer is becoming more interested in Canadian pulp. . . ." Let me say the same applies to paper from Canada and there is evidence of it in the case of Mr. Clarke. It is up to Canadians now to get on the move with some propaganda in Australia.

In the British market while 5,193 cwts. of newsprint was received from Canada during the first half of 19.1, it is satisfactory to note that between January and June 1922, 8317 swts. arrived at English ports; from Newfoundland 219,827 cwts., compared with 247,430 for the corresponding period in 1921. This is but a small indication that newsprint from the Dominion is valued here in an open market.

Again, packing and wrapping papers arrived from Canada during the last six months to the extent of 6,955 cwts., compared with 602 cwts. for last year.

In June last the supplies of newsprint from Canada and Newfoundland, exceeded those of Sweden and Norway together — and Germany and Belgium thrown in.

Paper Investments

It is announced that the Law Debenture Corporation of London will shortly issue for sale at the price of £95 per cent. £650,000 — 61-2 p c. guaranteed first mortgage debentures of Empire Paper Mills (19.2) Ltd. repayable at £102 p. c. by annual drawings of £40,000 of debentures commencing on February 1926. The interest is payable on 1st Feby. and 1st August . The Empire Paper Mills (1922) Ltd. owns mills, rail sidings, etc. at Greenhithe, (Kent) covering 16 acres The present output capacity is 600 tons of newsprint a week and this will be increased to 800 tons a week in 1923. It is stated that contracts for practically the whole of the output to be taken for 7 years have been arranged by the Associated Newspapers Ltd., which owns the "Daily Mail" London "Evening News" and other papers.

Six Months' Pulp

The supplies of pulp during the six months ended June 30 last reached 305,250 tons, compared with 178,592 tons for the corresponding period in 1921.,

Groundwood was received as follows for the six months:— Sweden. 36,6668 tons (444 tons in 1921); Norway, 126,587 tons (89,222 tons); Canada, 21-851 tons (21,227 tons); other countries, 2, 659 tons (339 tons) — total 187,765 tons, an increase of 76,543 tons over 1921.

The Diana Paper Company of Harrisville, N. Y. has engaged John H. O'Connell of Kalamazoo, Mich., as efficiency manager of its plant. Mr. O'Connell is president of the American Pulp and Paper Mill Superintendents' Association.

The best leaders seek character and quality as well as numbers in their following.

PULP AND PAPER NEWS

Dr. and Mrs. W. E. Hiley of Oxford, England, were guests at the Laurentide Inn on Monday and Tuesday of the present week. Dr. Hiley who is a lecturer in Forestry at Oxford University and a Technical adviser to the British Forestry Commission, visited Grand'Mère to see the Forest plantations, nursery and forest experimental work, of the Laurentide Co., Ltd. He has just spent three months in the Lake St. John and Saguenay district studying the rots affecting pulpwood trees. In his opinion the scientific management of Quebec forests will greatly increase their yield and improve their quality and if proper measures are taken now place the province in a strong position as to its future timber supply. Dr. and Mrs. Hiley declared Grand'Mère to be one of the most charming places they had visited in Canada. They are now on their way to British Columbia and return to England early in September.

The Rolland Paper Company, Limited, Montreal, have issued a neat advertisement in the form of a bridge scoring tablet.

Mr. S. J. B. Rolland, president of the Rolland Paper Company, Limited, has just returned from a pleasure trip, by steamer, along the North Shore of the St. Lawrence. He stopped at Anticosti on the return journey.

Among the attractions of the International Exposition of Chemical Industries at the Grand Central Palace, New York, Sept. 9-15, will be the showing of an 8 reel film showing the Manufacture of Newsprint Paper. This film was made at camps and plants of the Spanish River Co. One of the first exhibits of the film was at the summer meeting of the Technical Section at the Soo. It is an exceptionally fine film and worthily represents a great Canadian industry.

The paper trade will learn with regret of the death last Sunday afternoon of Mr. Leon Gottheil, of Castle, Gottheil and Overton, importers of paper making materials, 200 Fifth Ave., New York. Mr. Gottheil was 62 years of age.

Mr. and Mrs. T. J. Stevenson have returned to Montreal after a month's holiday on the Maine coast.

Westminster Paper Company, Ltd., is preparing a site for its new plant on the Fraser River near New Westminster, B. C. Part of the equipment has already been ordered, and J. J. Herb, A. M. Onkles and H. M. Lord, all from Peshtigo, Wis., have now located permanently in New Westminster.

Hans Renold of Canada Limited, 11 St. Sacrament St., Montreal, the well-known manufacturers of Renolds Chain Drives have just issued a very attractive, interesting and instructive booklet entitled, "Erection and Maintenance of Renold Chain Drives", which they advise us, they will gladly send to any reader of this publication on request.

Last month, Mr. S. J. B. Rolland, President of the Rolland Paper Co., was at St. Jerome to officiate at the opening of the fine new bridge recently built ta the mill. This was a very interesting function, and there were several hundred people present. At the same time he took occasion to present service buttons to all the mill employees according to their years of service. It is a remarkable thing that there are so many employees at the mill of very long service. Something like 75 had over 15 years' service and several between 30 and 40 years. There is more than one case of family of three generations all working together.

The Canadian Ingersoll-Rand Co., Limited, have been awarded the complete pump contract for the new mill of the St. Lawrence Paper Mills Limited at Three Rivers, Que., this making the second mill in Three Rivers to be equipped with Cameron pumps for water service, stock service and fire service, the other mill being the St. Maurice Lumber Company.

The Eastern lumber trade is in good shape so far as orders are concerned, but prices are not any too good. There is a brisk demand for spruce for American account, the bulk of the business going to the Maritime Provinces. B. C. forest products have advanced in price, largely owing to forest fire conditions which compelled the closing down of the camps. While the expert trade in the West is very strong, in the East it is not very satisfactory, the U. K. not being in the market for large shipments. In Montreal the nervous feeling caused by recent failures is passing away, but the competition is very keen.

Mr. Nelson Gain of the Don Valley Paper Company is away on a short vacation at his place at Erindale.

Mr. A. P. Costigane, Secretary Engineer of the Ontario Pulp and Paper Makers' Safety Association, is spending a few days with his family at Big Bay Point, Lake Simcoe.

Mr. J. N. Stephenson, editor of the *Pulp and Paper Magazine*, is spending the summer at Ste. Anne de Bellevue, as usual.

The regular monthly meeting of the book and writing section of the Canadian Pulp and Paper Association was held in Toronto on the 2nd instant. Conditions in this section show very marked improvement over last year, and improving conditions at present.

IMPROVEMENT PLANNED FOR NASHWAAK

ST. JOHN, N. B., July 25.—A party of directors of the Oxford Paper Company, New York, headed by Hugh J. Chisholm, the president, are here inspecting the plant and new construction work now under way to increase the capacity of the Nashwaak Pulp and Paper Company mills at Grand Falls.

On completion of their inspection trip here the party will leave on a tour of inspection of the timber limits, sawmills, coal mines and other properties in the Province belonging to the Nashwaak Company. The Oxford Paper Company's plant at Murray, Cape Breton, also will be inspected before the return trip to New York is made.

An expansion of the local industry involving an expenditure of more than $500,000 is contemplated by the mill directors. In fact, appropriation for half this amount already has been decided on and considerable progrss has been made with the project. The directors of the company have plans laid out for the reconstruction of the mill in order to increase its capacity by one-third.

When completed the plant's output will be eighty tons of pulp per day.

"Today is the Tomorrow that we worried about yesterday, and all is well." For this saying we are indebted to The Caravel, whose Editor got it from Mr. W. L. Davidson of Adelaide.

xxiv, 1006-1022, (1921); **J. Soc. Chem. Ind.**, xl, 845A, (Dec. 15, 1921). Experiments were made with an electrolyzer constructed on the bell system, a small and short inverted porcelain box containing a small iron plate as cathode being set at an inclination of 12 to 13 degrees to the horizontal. The hydrogen bubbles flowed along under the inverted cathode, and were discharged to outside the bell from the opening in the inclined bottom. With a current of 3 amperes per square decimeter of horizontal cross-section of the bell and 4 volts or more, a concentration of 130 to 140 grams per liter was obtained, as compared with 80 grams by the usual method. In tests extending over 59 days with 24 cells in series, using 110 volts and 120 amperes, the following average results were obtained. Current yield 83.68 per cent. energy for 1 pound of sodium hydroxide 1.69 kilowatt hour, concentration of sodium hydroxide 130. 78 grams per liter. -A. P. -C.

H-4 Method of Controlling the Discharge from Electrolytic Cells. U. S. A. Patent 1,410,681, H. C. JENKINS, March 28, 1922. The control is effected by a rise in level in a feed tank when electrolyte (or other liquid) is fed from an external source. The feed tank communicates with a second chamber containing a valve operated by a float which can be suitably weighted so as to follow the changes of level in the feed tank by a greater or lesser amount. Normally the liquid is discharged from the cell by overflow over a separate adjustable weir. The lifting of the valve allows the discharge of part or the whole of the cell contents independently of the overflow discharge over the weir. -A. P. -C.

H-4 Method and Apparatus for Producing Alkaline Hypochlorites. U. S. A. Patent 1,414,059, L. D. VORCE, April 25, 1922. The invention consists essentially in treating a solution of caustic alkali, preferably dilute, with chlorine and maintaining the temperature of the solution under treatment at a point below that at which salt and chlorate are formed in undue proportions (not above 30 degrees, and preferably below 25.). -A. P. -C.

H-4 Cathode for Chlorine and Alkali Cell. Can. Patent No. 212, 060, KARL HEINEMANN, Pirna, Saxony, Germany, May 31, 1921. In cells having a flowing mercury cathode, there is placed a stationary bottom plate provided on its surface with impedimenta arranged in rows forming a right angle with the direction of the mercury current, arranged so as to hold the surface of the mercury in continuous agitation. -A. P. -C.

H-4 Decomposition of Alkali Chloride Solutions. Can. patent No. 212,061, KARL HEINEMANN, Pirna, Saxony, Germany, May 31, 1921. On withdrawing the electrolyte from the anode compartment, the chlorine which it contains is removed, and the electrolyte is saturated with salt and used over again. -A. P. -C.

H-4 Electrolytic Cell for the Decomposition of Alkali Chlorides. Can. patent No. 212, 191, FREDRIKSSTAD ELEKTROKEMISKE FABRIKER A-S, assignee of J. K. LANGHARD, both of Fredriksstad, Norway, May 31, 1921. -A. P. -C.

H-5 Bleached Groundwood. (Bragg) See D-0.

K. — Paper Manufacturing and Equipment

K-12 Paper Drying Machine. Can. patent No. 212, 153, OTTO E. TOMLINSON, Minneapolis, Minn., U. S. A., May 31, 1921. -A. P. -C.

K-12 Paper Making Machine. Can. patent No. 212, 156, H. G. VAN OINUM, Piercefield, N. Y., U. S. A., May 31, 1921. A slice is provided which is adjustable both vertically and horizontally with respect to the deckle frame. -A. P. -C.

K-12 Paper Drying Apparatus. Can. patent No. 212, 170, AMERICAN COATED PAPER CO., INC., assignee of F. P. REED, East Orange, N. J., U. S. A., May 31, 1921. The paper is carried through the dryers on a wire which is not in direct contact with the heating surface but is separated from it by a layer of heated air. -A. P. -C.

K-12 Method of Water Control in Wire Sections of Fourdrinier Machines. Can. patent No. 212, 173, BAGLEY & SEWALL CO., New York City, N. Y., assignee of F. W. MONAGHAN, Mosinee, Wis., both in the U. S. A. The table rolls are so mounted that some of them can be removed out of contact with the wire. -A. P. -C.

K-18 Fiber Board from Bagasse. Can. patents No. 212, 129 and 212, 130, J. K. SHAW, Minneapolis, Minnesota, U. S. A., May 31, 1921. The patent covers a fiber board composed of different layers of bagasse fibers, interlaced with each other, and carrying their natural pith in the form of protruberances attached to the different fibers which offer resistance when one fiber tends to slip over another fiber. The layers, which are composed of different qualities of fibers, are highly compressed to form a board of great tensile and breaking strength for use as a substitute for lumber or leather in the manufacture of furniture, baggage, and other articles. -A. P. -C.

L. — Articles Produced from Pulp and Paper

L-4 Expansible Safety Envelope. Can. patent No. 212,092, K. MIKOLAJEWSKI, Chicago Heights, Ill., U. S. A., May 31, 1921. -A. P. -C.

L-4 Paper Container. Can. patent No. 188,444 and 188, 445, SEALRIGHT CO., INC., assignee of WILBUR L. WRIGHT, both of Fulton, N. Y., U. S. A., Jan. 28, 1919. -A. P. -C.

L-4 Manufacture of Paper Containers. Paper Container, v, No. 3, 94-86. The twenty-first article of the series on the manufacture of paper containers. -A.P.-C.

L-4 Paper Barrels. Paper Container, v, No. 5, 197. An article on the use, advantages, and manufacture of paper barrels. A. C.

L-4 Preservation of Fruit by means of Gummed Paper. Paper Making, xl, 336, (Nov. 1921). At a meeting of the Gummed Paper Manufactures at Atlantic City it was stated that gummed paper can be used to preserve perishable fruits and thereby greatly add to the palatability as well as to the keeping qualities of the fruit. -A.C.

L.-4 Parchmentized Ligno-Cellulose Article, and Process of Making Same. E. B. EDDY CO., LTD., assignee of ALFRED TINGLE. Can. Patents 217,995 and 217,996, April 25, 1922. Articles (e. g., pails, etc.) made of pressed pulp require large quantities of varnish, owing to their porosity. The object of the invention is to provide a method for rendering the surface of the article relatively impermeable and adapted to receive a coat of varnish. The article is immersed in sulphuric acid for a short time (1 to 3 minutes for 57° Beaumé acid), allowed to drain washed in running water, weak ammonia (10% of 26° Beaumé ammonia and 90% of water), stronger ammonia (20 per cent. of 26° ammonia), and finally in running water. The article is dried and finally dipped in a suitable varnish. -A. P. -C.

L.-4 Waterproofing Efficiency of Some Di- and Trivalent Salts of the Higher Fatty Acids and their Absorption by the Fibers of Paper. S. C. BHATNAGAR. **J. Phys. Chem.**, xxvi, 61-71, (1922); **J. Soc. Chem. Ind.**, xli, 324A, (May 15, 1922). Utensils constructed of paper or paper pulp may be made water-tight by immersing in benzene or turpentine solutions of the oleates and linolates of aluminum, copper, zinc, nickel, manganese, lead and magnesium. The efficiency of the various soaps is very different. -A.P.-C.

L-5 Transformation of Wood into Pure 100 Per Cent Ethyl Alcohol. Fr. patent No. 503,990, R. FABRE and

L. SOLARI, Italy, March 31, 1921. Chimie et Industrie, v, 458, (April 1921). -A. P. -C.

L-5 Process for the Manufacture of Alcohol from Wood or other Cellulosic Materials. Fr. patent No. 503, 073, E. DUBOURG, France, March 8, 1920. **Chimie et Industrie**, v, 323, (March 1921). The sawdust is sterilized by heating in an autoclave under a pressure of 2 atmospheres with 5 times its weight of water and 10 per cent. of material in nitrogenous compounds. It is then saccharified by means of molds **(Heliomycelium fuliginosum** or **Botrytis cinerea)**, aeratilng the material strongly. It is finally subjected to alcoholic fermentation. -A. P. -C.

L.8- Paper Making and Printing. LEQUATRE. **Papier**, xxv, 49-55, 97-103, 145-149, (Feb., March, April, 1922). The author reviews the progress of printing since its invention, showing how paper making had to keep up with this progress and where it has failed to meet the requirements of the printer. Tough paper is a finished product for the paper mill, it is a raw material for the printer, and it should be made so as to meet his requirements. The paper maker should therefore study the problems of the printer and do his utmost to furnish a material in accordance with the use to which it is to be put. -A.P.-C.

M. — General Equipment

M-6 Electricity in the Paper Mill. R. W. LEEPER, Management Engineering and Development Co., Dayton, Ohio. **Paper,** xxx, No. 7, 24-28, (April 19, 1922). A complete description of the electrical equipment of a two-machine mill which the entire power, heating and drying demand has steam as the initial energy and which has a normal daily production of 75 tons of book paper. -A. P. -C.

M-7 Modern Lighting for Paper and Pulp Mills. J. H. KURLANDER, Edison Lamp Works, Harrison, N. J. **Paper Trade J.,** lxxiv, No. 15, 195-211, (April 13, 1922). A discussion of the problem of lighting in pulp and paper mills, describing various types of equipment put out by the Edison Lamp Works and illustrating its application in pulp mill, beater room, machine room, and finishing room. -A. P. -C.

M-8 Pumps and their Characteristics. E. F. DOTY. **Pulp and Paper**, xx, 5-8, 27-30, 89-90, 101-104, 117-120, 137-140, 158-160, 177-178, 201-203, 225-228, 249-251, (Jan. 5 to March 30, 1922) ; **Paper Trade J.,** lxxiv, Nos. 1 to 9, (Jan. 5 to March 2, 1922). A preliminary publication of material on pumps and pumping machinery to be revised and used in the text-books published by the Canadian and American Pulp and paper industries. -A. P. -C.

M-11 Weighing Apparatus for Liquids. U. S. A. Patent 1,412,410, C. I. LINDAU, April 11, 1922. The machine is very much along the same lines as the Allen Weightometer. See E. J. TRIMBEY, this journal, xix, 885, Aug. 25, 1921. -A. P. -C.

M-12 Importance of Combustible Gases in Flue Gases. Pulp and Paper, xx, 365-370, (May 4, 1922). See MOELLER, this journal, xix, 1032, Oct. 6, 1921.

O. — Water Supply and Equipment

O-3 Treatment of Water for Steam Making. JULIAN F. SIMSOHN. **Chem. Age (N. Y.),** xxx, 43-46, (Jan. 1922). — A description of the various methods of water treatment (alum, lime-soda, zeolite, boiler compound), and of the action of the treated water on the boiler. -A.P.-C.

R. — General

R-1 ; R-11 Experimental Paper Mill For Siam. China Clay Trade Rev. iii, No. 29 (Oct. 1921). The Siamese government has planned to purchase a small experimental paper mill for use in Bangkok, Siam, for the purpose of developing the use of raw materials such as lalang grass, rice straw, and banana stems for paper making. It is possible for some of this paper to be used by government departments in Siam. The mill will be shipped complete in all details, and it is stated that the Siamese government has decided to obtain the services of an American to install the mill, start operations and teach the natives to handle it. -A. C.

R-3 Value of Co-operative Salesmanship. ARTHUR W. BLACKMAN. **Paper,** xxx, No. 10, 7-11, 14-15, (May 10, 1922). Suggestions on management problems bearing on the compensation of salesmen in the paper trade, giving a description of the system used by the author to keep track of the work of his salesmen and of the methods employed to arouse emulation. -A.P.-C.

R-12 The Manufacture of Straw Pulp. RAYMOND FOURNIER. **Papeterie,** xliv, 448-454, (May 25, 1922) A comparison of the cost of producing bleached and unbleached straw pulp by the soda process, and unbleached pulp by the lime process. -A.P.-C.

R-5 Conditions in the News Print Industry. P. T. DODGE, President, International Paper Co. **Pulp and Paper,** xx, 338-340, (April 27, 1922). Address at the annual business meeting of the American Paper and Pulp Association, April 13, 1922. -A.P.-C.

R-5 Imports from Germany into South Africa. Pulp and Paper. xx, 364, (May 4, 1922). -A.P.-C.

R-12 Figuring Costs when Production is below Normal. P.H. HUOT, Laurentide Co., Ltd. **Pulp and Paper,** xx, 155-157, (March 2, 1922). A discussion of the idle time costs (by fixed percentage or amount, by analyzing every element and item of cost, by distributing and charging off expenses on basis of normal production), of the different methods of charging them off (selling or administration expense, total cost of sales, special item, etc.), and of the importance and usefulness of determining them. -A. P. -C.

R-13 Proceedings of the Technical Section of the Canadian Pulp and Paper Association. Pulp and Paper, xx, 161-163, 179-181, 197-201, 221-224, 255-258, 275-279, 297-301, 322-325, 343-345, (March 2 to April 27, 1922). A stenographic account of the meeting held in Montreal in January 1922. -A.P.-C.

R-13 Annual Meeting of the Ontario Pulp and Paper Makers' Safety Association April 6, 1922. **Pulp and Makers' Safety Association,** April 6, 1922. Text of the address of President George Carruthers and of the report of Secretary A. P. Costigane. -A.P.-C.

R-0 The Technical Man's Duties. A. B. GREEN, Lincoln, N. H. **Paper,** xxix, No. 7, 9-11, 18, (Oct. 19, 1921). The technical man's duty consists in solving those problems which are necessary in order to enable the management to lay out the how, to give the workman an instruction card which puts him in possession of the best method known to date. He should search for the one best method of doing a thing in its entirety, including the phases of working instructions, plant routing, storage, accounting equipment, selection of personnel, etc. -A. P. -C.

R-0 Humidity Control. U. S. A. Patent No. 1, 409, 221, A.W. LISSAUER, assignor to W. L. FLEISHER & CO., INC., March 14, 1922. The air is admitted to a chamber in which it is thoroughly sprayed and then impinges on baffles or "eliminators" which remove the excess water which has a temperature equal to the wet bulb temperature of the air at this point. The spray water is circulated repeatedly, and is heated by means of steam, the inlet valve of the steam pipe being controlled by means of thermostats which are immersed in the "reacted" water. -A. P. -C.

BITS OF NEWS FROM BRITISH COLUMBIA

The properties of the Western Canada Pulp and Paper Co. Ltd., including the plant at Port Mellon and large timber limits on Vancouver Island and elsewhere, have been purchased by the Manufacturers' Holding and Investment Corporation Ltd., Toronto, whose bid was equal to approximately 70 cents on the dollar on the outstanding first mortgage bonds. An application will be made in due course to the Supreme Court for confirmation of this sale.

This company, the first to make paper in B. C., has in the course of its existence been known as the B. C. Wood Pulp and Paper Company, Colonial Pulp and Paper Company, Rainy River Pulp and Paper Company, and finally Western Canada Pulp and Paper Company Limited. The sale followed judgment entered against the company by the Chartered Trust and Executor Company on debenture bonds of $1,000,000.

The Wigwam Pulp and Paper Company has been organized and incorporated with a capital of $5,000,000 and extensive operations along the Elk River near Elko are contemplated.

Chicago and Kansas City newspapers are said to be behind the enterprise, and they will absorb the entire output of the proposed mill. It is understood that bonds of $4,000,000 have already been underwritten.

The company will have its headquarters in Vancouver. Thomas Henderson, of Vancouver, and C. D. McNab, of Waldo, are interested in the project.

John Emerson, of Farris, Emerson & Stultz, solicitors for the Prince Rupert Pulp and Paper Co. Ltd., and executor of the estate of the late J. S. Emerson, announces the resignation of himself and Mr. J. Ward Bell, co-executor, from the directorate of the company, and that the solicitors for the company and the first mortgage bondholders have elected to represent only the bondholders in future, in view of the possibility of a conflict of interests. Mr. Emerson states that interest on the first mortgage bonds, government licenses and fees amounting to $300,000, are in arrears or will have to be met within a few months, and the further financing of the project seems impossible.

The City of New Westminster has now leased to the newly incorporated Westminster Paper Mills Company, Ltd., a site on the north arm of the Fraser, adjoining the plant of the Triangle Chemical Company, being part of what was formerly an Indian reserve lying along the river bank between Sixteenth and Twentieth streets. This property has now been cleared of brush, and as soon as the dredge King Edward, now tied up for overhaul, is available, the filling will be done with sand from the channel at that point.

The heads of the company, Mr. Francis Herb, Mr. A. M. Onkels and Mr. H. M. Lord, all of whom hail from Peshtigo, Wis., have now located permanently in the city. Machinery for the new plant is already on the way.

Regarding the failure of the negotiations for the erection of a pulp mill at Prince George by the Fraser Syndicate, the Prince Rupert Daily News makes the following comment:

"The announcement made recently by Hon. T. D. Pattullo, minister of lands, on his return from the East where he had been in consultation with the interests considering the propositions, showed that, while the Prince George proposition had come to a temporary impasse at least, the outlook for the establishment of a pulp mill here was still a live matter and the possibility was much closer that many people might believe.

It goes without saying that Mr. Pattullo is right behind the local scheme and if there is any possibility of the provincial government by any reasonable means being instrumental in the obtaining of the new industry here it will get the Minister of Lands' full support. In fact he has already told the financial interests of Chicago and Dayton who are now considering the local project that the provincial government will give them every assistance in its power.

Mr. Pattullo was by no means pessimistic of the eventual success of the proposition while he was here. Statements he made indicated that, even if the present interests did now go through with their plans, Prince Rupert was very likely to have a pulp mill before long anyway.

The Minister pointed out, as most people here know, that the location is one of the most eminently suitable in the country for such a plant. The Seal Cove site is both on water and rail transportation which makes marketing a very easy matter, there is an abundance of the requisite raw material in the immediate vicinity, power and water supply is close at hand and the site itself is most convenient."

FRANCE MAY INCREASE TARIFF ON PAPER

The Bureau of Foreign and Domestic Commerce has notified the American Paper and Pulp Association of a proposal of France to increase the protective tariff on foreign paper, and suggests that American exporters take up this matter with their representatives in France to prevent such unfavorable action.

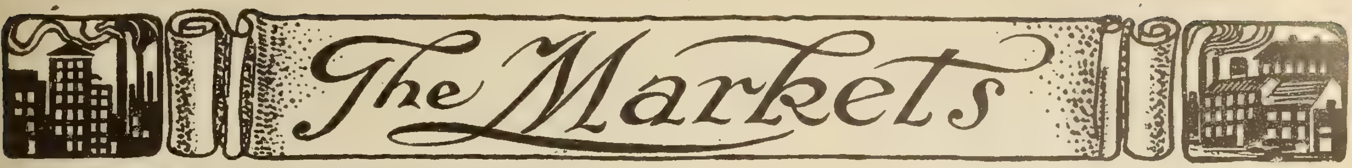
The information came from William C. Huntington, commercial attache at Paris to Henry Chalmers, Chief of the Division of Foreign Tariffs. The situation is the same as in Cuba, where the domestic producers asked the government to impose higher duties on American paper. In his outline of the French situation, Mr. Chalmers says:

"We have learned by cablegram that a similar, situation has arisen in France, in that the French paper manufacturers are asking the Minister of Commerce for increased protection, urging a coefficient of 3 for the coarser grades of news print and book paper, which now pay the basic rates. In a similar case of a proposed increased duty on products derived mainly from the United States, it was possible for unfavorable action to be forestalled through the concerted representations of the French representatives of the American exporters in that line."

FORT WILLIAM PAPER CO. SELLS 2,100,000 BONDS

An issue of $2,100,000 first mortgage bonds has been sold by the Fort William Paper Co., Ltd., to Messrs. Peabody, Houghteling & Co., of Chicago. The purpose of the issue is to redeem bonds already outstanding and provide money for proposed extensions to the company's plant.

The Fort William Paper Co., Ltd., has had in operation since May, 1921, a ground wood pulp mill, situated at Fort William and having a capacity of 125 tons of ground wood pulp per day. The company is now proceeding to add a newsprint mill with a daily capacity of 150 tons of newsprint and the foundations for this are now under way. The company expects to have the paper mill in operation by December 1, 1922. The enterprise has an outstanding issue of $1,000,000 first mortgage bonds, which have been called for redemption August 1, and it is to take the place of these bonds and to provide the necessary funds for the paper mill that the company has created the issue of $2,100,000, which has disposed of as above.



The Markets

CANADIAN TRADE CONDITIONS

Montreal, August 8. — From the local point of view, the paper trade is slow. It has fallen away, due no doubt largely to seasonal reasons, but it is anticipated that we shall see a substantial improvement in the fall. Taking the year up-to-date, there has been a considerably larger turnover than in 1921, and with the good harvests promised there is every reason to believe that on the whole, the year's trade will be satisfactory.

In newsprint there is little change. It is yet too early to say anything definite as to next year's prices, but it is probable that we shall not see any marked change—indeed it would not be a matter for surprise if the price remained the same during the early part of 1923. Above everything, the mills desire a stabilized market, with sufficient production to keep the machines running somewhere near capacity. Buyers of newsprint are likely to reduce consumption in the event of higher prices. The mills are gradually reducing their costs, and will be able to secure additional supplies of pulpwood of substantially lower rates, as compared with most of that now being used. Mr. A. L. Dawe of the Canadian Export Paper Company, Limited, who has just returned from a visit to the States, reports that the prospects for continued good business are very satisfactory.

Boards are still in good demand, the recent upward turn keeping the mills busy. Roofing papers are feeling the effects of the revival in building, while waste paper is also moving freely.

The week's news regarding the pulp market is distinctly favorable. The report of the creditors' committee of the Riordon Company confirms the hint we recently gave concerning the progress of affairs. Slowly but surely the Company is emerging from the difficulties which at one time threatened the existence of the concern. The change in the pulp business of the company is more than satisfactory considering the financial and other problems which had to be solved. In the place of the mills being closed, we find enough orders to keep both Kipawa and Hawkesbury at full production, and sufficient business for some time to come. Naturally the company is not yet out of the woods, but the prospects are far more optimistic than at one time seemed possible. Another good point in the market is the rejection by the U. S. Senate of the proposal to impose a duty of 5 p. c. ad valorem on bleached and unbleached pulp. This duty would certainly have affected Canada's pulp trade with its most important customer. Apart from the protective character of the proposal as it affected the U. S. pulp industry, it looked like another of the many recent moves directed against Canadian commerce by those who are anxious to increase the export business of the States, but at the same time are putting up high tariff barriers in order to exclude foreign competition. In other words, they want to sell but decline to buy. The bleached sulphite demand is still good; groundwood is selling more freely, but at low prices.

Indications are that a considerably larger cut of pulpwood will be made this season. Companies which last year refrained from operations will now go into the woods, and will secure their supplies at much lower rates.

Toronto Topics

Whether the present quietness is seasonal or that business conditions begin to reflect some uncertainty as to the outcome of the labor situation, may be an open question.

There is, however, a shrinkage of retail sales noted this week, where it appears evident that householders are buying more carefully. Coal dealers in Toronto and Hamilton believe that the strike will be settled in time for them to supply domestic coal, but do not say much about price.

The Ontario Fall wheat crop is reported as well up to average and of fair quality, and farmers are getting 90c. to 95c. for No. 2 grade Winter wheat. The week's wheat markets have been declining slightly, however, and rural business, while healhy, has not expanded in any marked way of late. It is evident that branches of business are awaiting actual returns before undertaking obligations on the basis of harvest. Weather conditions on the whole are fair though some damage was done in a comparatively small area immediately west and northwest of Toronto, by a storm of cyclone-like behavior.

Generally Manufacturers appear to be doing fair business while wholesalers and retailers are quieter than last week.

Collections show, if anything, a shade of improvement. Writing down of inventories seems to have been done in most businesses and while accompanied by some failures seems to have cleared the situation a little and moved stocks. Conservative buying, depletion of stocks, good harvest and improving employment conditions lead to belief in a fairly good Fall and Winter trade.

Market Notes

There is no marked change in the situation as regards pulp, which is quiet but steady, and mills are generally operating at a fair percentage of capacity.

Groundwood — $30. to $40 delivered.

Sulphite. — News grade around $60.00, and book around $65 delivered, Bleached $80.00 to $90.00.

Sulphate. — $70.00 delivered, market for sulphate and kraft inclined to be quiet.

Book & Wwriting Mills report improving demand. *Coating* mills are finding better conditions, though this market has been, and is still quiet. *Board, wrapping* and *bag* lines are inclined to be quiet. Tissue specialties are in good demand. Prices in all these lines unchanged.

Wrappings. — No.1 Kraft, M. F., $8.00, M. G., $8.15.;
Colored Sulphite, $8.00;
Colored Kraft, 9¾c to 10¾c;
B. Manila, $5.50;
No. 1 Manila, $7.25;
Fibre Manila, $7.25;

Bags. — Light Manila, 62p.c. — 7p.c. off 100 M Lots;
Heavy Manila, 60p.c. — 7p.c. off 100 M Lots;
Light Kraft, 60 p.c. — 7p.c. off 100 M Lots.
Heavy Kraft, 50p.c. — 10p.c. off 100 M Lots;
White Confect., 17½p.c. — 10p.c. off 100 M Lots;

Tissues. — No. 1 Manila, 20 × 30 .80c; 24 × 36, 1.05;
Cap Tissues 10 lbs., 20 ×30 .90c; 24 × 36, 1.25;
No. 1 White, 20 × 30 1.10; 24 × 36, 1.55;

Towels. — Car Lots:
Interfolding per case, $5.63 Net.
Bleached White — Rolls of 150 towels, 50 rolls to case, $22.00 Less 22p.c.; Natural, $19.00 Less 22 p.c.; No. 3 Towls, $13.75 Less 22 p.c..

Toilets — Car lots — List price less 20 p.c. and 25 p.c.

Paper Stock — Demand for all paper stock is good, especially white shirt cuttings where prices are advancing. New cotton cuttings are also in good demand.
No. 1 Hard White Shavings $3.75.
No. 1 Soft White Shavings $3.40.
Heavy Books and Magazines, $1.70.
Ledgers and Writings $1.95.
No. 1 Kraft $2.25.
Nwspapers .80.
No. 1 Mixed Papers .70.
No. 1 Miscellaneous .65.
No. 2 Miscellaneous .60.
Cotton Rags No. 1 White .04½.
Thirds and Blues (repacked) .02.
Roofing Rags $23.00.

New Cotton Cuttings No. 1 White Shirt Cuttings, 10¾ to 11¼;
Fancy Shirt Cuttings, 5½ to 5¾;
Canton Flannels Bleached, 8½;
White Lawns, 7½;
Blue Overall Cuttings, 5½.

Ropes and Bagging. — No. 1 Scrap Bagging, $17.50;
No. 1 Manila Rope, $6.00;
Mixed Strings, $20.00;

NEW YORK MARKETS

New York, August 5—(Special Correspondence)—Activity in the paper industry of the United States continues of fairly broad dimensions; there has been no slowing down of demand this week, and market conditions have showed steady improvement. The most unfavorable factor at present is the coal miners' strike. Paper mills in quite a number of cases are in need of fuel, and the scarcity of coal is so pronounced in some parts of the country that mills have been forced to close down, at least for a time. This loss in production, however, appears to be making for a stronger market situation, as buyers are increasing their operations apparently in the fear that a condition may arise where they will not be able to get all the paper required. There is consequently much activity in the trade, with practically all kinds of paper sharing to more or less degree, and the price tone is constantly firming.

The Federal Trade Commission's report for June, issued this week, shows that production of paper continued at a high level in that month. A total of 593,335 net tons of all kinds of paper was produced by United States mills in June, which is some 3,000 tons in excess of the May output of 589,971 tons, and only several hundred tons below the record production for the present year up to July of 593,860 net tons in March. These figures substantiate all the encouraging reports that have been emanating from manufacturing quarters in recent months relative to the increasing production of paper to take care of the expanding demand from consumers. Mill stocks of paper increased but slightly in June from a total of 285,729 net tons at the beginning of that month to 293,066 tons at the end of June, thus showing that manufacturers shipped out practically all of the paper produced during the month. Taking June figures as a basis, it is readily seen that manufacturing activity in the paper industry of this country is running well above the average. During the busy days of abnormal business in the after-the-war boom the maximum output reached by United States mills in any single month was in the neighborhood of 640,000 tons, and current production is within close proximity of this tonnage. An average of production over the past five years is 524,342 net tons, so that production in June was far above what can be considered normal.

Talk of further advance in newsprint prices and record figures of consumption raises the question of the reason for the rapidly expanding demand. The answer is to be found in the scramble for circulation evidenced by campaigns now under way by many large newspapers in various cities of the country. Consumption of newsprint in the States for the first six months of 1922 was at an annual rate of about 2,300,000 tons. This mark, reached for the full 12 months, will establish a new record of consumption, 11.7 per cent over 1920 the previous record year. Figures compiled for the Post Office show average daily net paid circulation of English language newspaper in this country for six months ending March 31, 1922, to be at a new high mark, while the number of pages has also increased. The average daily net paid circulation of English language newspapers for the six months ended last March 31 was 29,644,000 copies, an increase of 2.7 per cent over the preceding six months, period, while the average daily number of pages of metropolitan newspapers during June of this year showed an increase of two pages on week days over a year ago and nine pages on Sundays.

The market for newsprint is exceedingly firm. The recent rise in prices and talk of further advancement are attracting publishers into the market and there is a steadily increasing demand for print paper. Mills are running actively and are shipping out paper about as rapidly as it becomes available, with most manufacturers contracted up for the great bulk of their output until the end of the year. Prices are strong at between 3.50 and 3.75 cents a pound f. o. b. mills for standard news to contract customers and about a quarter of a cent higher to transient buyers.

Book papers are gradually improving their market position as demand broadens and prices today show a stiffer tone than in a long time. Fine papers are moving well, with demand consistently increasing and with prices exhibiting an upward trend. Coarse papers are seasonally quiet as is usually the case at this time of the year, though specialties are in good demand at advancing prices.

The board market has again strengthened this week. Shortage of coal is hampering board manufacturers to no little extent and most mills in the East have temporarily withdrawn all prices while unwilling to take orders under prevailing circumstances. Plain chip board is being sold by dealers in New York from stock at $45 and $47.50 per ton, while news board is bringing $47.50 to $50 a ton. Paper box manufacturers are evidently growing anxious over the situation and are absorbing board freely and meeting the quotations named with seemingly little reluctance.

GROUND WOOD—There is a steady tone to quotations on ground wood. No important change has come over the market this week, but pulp continues to move into consumption in consistent fashion and prices, if anything, display a rising tendency. Domestic producers are having little or no trouble in securing around $30 a ton at grinding plants for spruce ground wood for prompt shipment, and consumers in this country are reported buying in Canada at an average of about $27 a ton f. o. b. producing mills.

The Federal Trade Commission's report shows a decline in mechanical pulp production in June from the May output, a total of 148,328 net tons being produced by U. S. mills in the former month, against 167,197 tons in May.

CHEMICAL PULP—Reports continue to tell of a steady demand for chemical pulp of practically all kinds. Paper mills are buying in good volume and apparently are begining to look ahead and are placing orders against forward requirements. Sulphite especially is firm in price and in good call, and sentiment among at least those on the selling side of the trade is that higher pulp prices will obtain before the year is out. Foreign bleached sulphite of No. 1 quality is selling at around 4 cents per pound ex dock New York, and No. 1 foreign unbleached sulphite at an average of 2.50 cents. Foreign easy bleaching sulphite is quoted at 2.75 to 2.90 cents on the dock, and Mitscherlich at about 2.70 cents. Domestic pulps hold steady at last reported prices. Kraft has firmed and importers in general want at least 2.50 cents a pound ex dock for Scandinavian kraft at present.

Production of chemical pulp in the United States in June was well sustained in comparison with the May output, showing a slight increase from 164,497 net tons in May to 164,931 tons in June, despite the drop in mechanical pulp output.

The United States Senate, in considering the impending tariff bill this week, removed the 5 per cent ad valorem duty on chemical pulp proposed by the lower house of Congress and returned pulp to the free list.

RAGS—Low grades of papermaking rags, principally those used by felt paper mills, are almost a booming market condition. Demand is very active and prices are mounting at a steady pace. Sales of No. 1 roofing stock have been reported in the East this week at 1.30 cents per pound and higher at dealers shipping points, while western dealers are said to be securing 1.50 cents for such rags. No. 2 roofing rags are readily fetching 1.20 cents f. o. b. New York, and foreign dark cottons the same price. Other grades of rags display a firm price tone. New cuttings are gradually moving higher under the stimulus of a brisk demand from mills, and old whites and blues are firming. New No. 1 white shirt cuttings are reported fetching 11.50 a pound f. o . b. this city, No. 1 washables of bleachables quality 4.25 cents, unbleached muslins 9.75 cents, and new light silesias 7 cents.

PAPER STOCK—Sharp advances have been scored by prices on some grades of old paper. No. 1 mixed paper and old magazines are leading the procession upward, and the former has sold at 75 cents a hundred pounds f. o. b. New York, while No.1 heavy books and magazines have brought 1.90 cents a pound and mixed books 1.55 cents. Even at these stiff prices dealers are said to be cautious about taking orders owing to the difficulty experienced in locating usual supplies of these kinds of waste paper. Shavings are firm but unchanged at around 3.50 per pound for No. 1 soft white and 3.90 cents for No. 1 hard white shavings. Folded newspapers are commanding 80 cents a hundred pounds New York, old No. 1 kraft paper 2 cents and white blank news cuttings around 1.85 cents.

OLD ROPE AND BAGGING—Prices on old manila rope have eased off about a quarter to a half cent per pound. Where dealers a few days ago were obtaining 6 to 6.25 cents per pound for this article f. o. b. New York it is understood that mill orders are now

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readily accepted at between 5.50 and 55.75 cents a pound. Demand has sagged and as is usually the case when this occurs, more old rope appears to be available. Old bagging is moving in routine quantities at unchanged prices.

ADAPTED TO CANADIAN PRACTICE.

Mr. William Whyte has been appointed Canadian agent for the "Tremor" screen, made by the Watford Engineering Works, Watford, Eng. This concern has made paper mill machinery since 1827 and is producing a number of machines, all of which Mr. Whyte is introducing. A number of orders are understood to have been placed already for the "Tremor" screen, which is fitted with a special, large drum for orth American practice. The Baggey and Sewell Co., Watertown, N.Y., are licensees for the U. S. A.

PAPER MANUFACTURERS IN SWEDEN AS SEEN BY AMERICANS

Stockholm, July 6, —"If America expects successfully to meet Swedish competition in the pulp and paper markets markets of the world, it must be by making quality products, and by paying the closest attention to the special requirements of the buying nations."

This was the statement made by Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association, at the conclusion of a study of Swedish paper mills in the interest of American manufacturers. He has been touring Sweden with George W. Sisson, Jr. former president of the American association, and has studied both the manufacturing and the forestry phases of the industry in Sweden. He will next go to Norway and Finland, before investigating conditions in the Germanic countries.

"The surprising feature of our visit," he said, "was the willingness of the Swedish manufacturers to discuss industrial problems with us. We found they look upon America as an important customer, and wish to have a clear understanding of conditions, so that the natural competition with America may be friendly, even though it is sure to be intensive.

"Sweden's climatic conditions have forced them to realize the importance of hard work, and of quality in their presents products. If America is to meet their competition, the closest attention must be paid to equality of output. Sweden has done great research work in utilization of waste in America. One mill makes 50,000 liters per week of Alcohol, from the liquors of the mill. Small pieces of wood, too small to make into paper, are used as fuel in the power plants.

"The attention paid to forestry would be a revelation to the American manufacturer. In Sweden, forestry is practised on a scale more intensive than is considered practicable in America, even though the American paper mills are leading the industry in the United States in the practice of forestry."

MAKING ARTIFICAL ABRASIVES

The Cleveland Stone Company has entered the field of Artificial Abrasives. They recently acquired a prominent grinding wheel concern having an enviable reputation for quality and integrity.

The resources and organization of The Cleveland Stone Company together with their prominence as grinding experts will enable them to attain as high a standing in the artificial wheel industry as they have always maintained in the stone business.

Their many friends will be glad to learn of this addition to their Grindstone Department, which will hereafter be known as the Abrasive Department. H. W. Caldwell, Vice-President, will have direct supervision and A. W. Curtis will be Sales Manager.

B. C. MILLS TO OUST ORIENTALS

Viictoria, Aug. 7. — Steps to have all Orientals ousted from the pulp and paper mills of British Columbia were taken Saturday by Hon. A. M. Manson, attorney-general and Minister of Labor.

Nearly 1,000 Orientals, a large proportion of them Japanese, are employed in the industry. Mr. Manson proposes that their places be taken by white men, many of whom have large families and are either out of work altogether or are employed on less profitable jobs.

CHAS. WALMSLEY AND CO., Ltd.

Canadian admirers of this wellknown and highly respected firm will be interested to hear that a fusion with Sir. H. G. Armstrong Whitworth & Co Ltd., the great engineering firm, has been effected. This new fusion will place Charles Walmsley & Co. Ltd. the greatest paper machine builders in the world. They will have at their command unlimited engineering advice in all matters. Both Walmsley and the Armstrong Witworth Co. were considered two of the best engineering concerns in the United Kingdom. J. Wolstenhelme, the managing Director, and Wm. Adamson, the technical Director, continue to advise under the new regime.

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CHEMICAL — MECHANICAL

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FOREIGN — DOMESTIC

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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Saskatoon Calgary Vancouver Victoria

EDITORIAL

JUST PLAIN GAMBLING

Gamblers in paper stocks are again active. One unfortunate phase of this renewed speculation is the prominence given by responsible papers to news which is calculated to foster that speculation, in addition to the publication of comments which are apt to mislead those who have no intimate knowledge of the condition of the industry. The leaders of the pulp and paper trade view with disfavor not only gambling in the shares of the companies, but also the expression of unduly optimistic views concerning prices and the immediate future of the industry. Those leaders are naturally anxious to see the stocks in a strong market position, but they deprecate very emphatically the use of such stocks as speculative counters.

Unlike the gamblers, those who are responsible for the direction of the companies are working for the permanence of the industry. They have substantial reasons for their disapproval of Stock Exchange transactions of the gambling character. When a periodic slump occurs there are many who will blame the companies for the reaction and will impute the collapse to manipulation by those who are at the head of the concerns. This is unjust, but people who have lost money are not in a judicial frame of mind. There is this other point—the companies from time to time enter the money market for additional capital for extensions and other purposes. Investors do not care for stocks which are regarded as more or less speculative counters, a reputation created against the wish of the directors. A certain amount of prejudice has been aroused in investors' minds against such stocks, with the result that the chances of obtaining capital are seriously diminished. Gambling in any company's shares is bound to react on that concern.

The recent advance in paper stocks is alleged to be based on the improved prospects of the paper business and on the likelihood of newsprint being advanced in the near future. The price of newsprint may or may not advance next year; that will have to be decided when the time comes and in the light of conditions then existing.

The advance of $10 per ton by the International Company and the rise in spot lots have absolutely no bearing on the future. They are caused by present circumstances, by the pressure of demand, conditions which may radically change in a short period. They are no guide to what may happen in four or five months.

The artificial character of many stock operations, in relation to the value of paper stocks, may be judged by the fact that the stock of one company which is not paying a dividend is about 15 points higher than that of another company which makes a small return. There has been no change in basic conditions to justify the recent extensive buying, judged from an investment point. The Canadian mills are not producing any more tonnage—they are running at capacity—and the price is the same. The movement is, in fact, due almost entirely to speculation, and speculation of a more or less blind character.

The paper industry, as a whole, desires to work out its salvation in its own way—to be free from the interference of the stock-jobbing element which has no real interest in the upbuilding of one of the most promising branches of Canadian commerce. The trade welcomes the constructive investor; it resents the destructive gambler.—D.

THE DICTIONARY

In this issue we print the last installment of a "Dictionary of Pulp and Paper Mill Terms". The same material has been published simultaneously in serial form by the *Paper Trade Journal.* Some information of this character was conceived of as a section of Volume 5 of the textbooks on *Manufacture of Pulp and Paper.* The trade, however, appears to want a more extensive Glossary than there will be space available for in the textbook. The *Pulp and Paper Magazine* has therefore decided, with the consent of our contemporary, to publish the dictionary or glossary in book form. This will be done when the Bureau of Standards, in conjunction with a representative committee of the paper trades, has collected standard definitions of a number of papers and boards not included in the material published so far, and has completed a standard classification of papers.

Any reader who wants the book will do us a great favor by intimating his interest.

CONVERSION LOAN ANNOUNCED

On Wednesday of last week a statement was issued by the Minister of Finance relative to the Government loan operations. As had been anticipated, the domestic loan which it is intended to launch will take the form of a conversion loan. That is to say, investors who purchased in 1917 the Dominion Government bonds that will mature on the 1st of next December are to be given the opportunity of reinvesting their money in Dominion securities. That is right and proper. The bonds to mature on the 1st of December amount to $178,000,000, and, with such a large loan as that being repaid in Canada, Canadian investors would naturally have felt aggrieved if they had not been given the opportunity of reinvesting in Dominion Government securities (See page 19.)

Persons who desire to reinvest thus will have issued to them new bonds bearing the same rate of interest as the old, namely 5½ per cent., and either for five years, maturing in 1927, or for ten years, maturing in 1932, as the bondholder may prefer. An advantage to the investor, as the Finance Minister points out in his announcement of the loan, will lie in the fact that, while the maturing bonds will be retired on the 1st of next December, and the interest coupon of that date will be paid, the new bonds to be delivered in exchange will be dated the 1st of November, and will thus carry one month's accrued interest.

On the other hand, the new bonds to be issued will not be exempt from taxation as were those which are to mature on the 1st of December. This we conceive to be absolutely the right course to adopt. Indeed, on general grounds of public policy, we consider that the issuance of tax-free bonds is unwarrantable, and we know that it has, within recent years, formed a much-used weapon in the rhetorical armory of those who take pleasure in grievances anent the special privileges accorded to wealth. However, the fact that the new bonds will not be tax-free, as were the old, may possibly make them less desirable in the eyes of some people. At the same time, as the Finance Minister rightly says, the bonds of the Dominion Government are the very highest class of security that can be offered to Canadian investors, and he makes a point that he is entitled to make in emphasizing the substantial nature of the concession that is being made to domestic investors in offering such liberal terms for renewal of the maturing loan, in view of the fact that the Government's recent loan was placed in New York at a figure that yielded only a little over 5 per cent.

The privilege of investment on the terms outlined above is to be confined to holders of the outstanding bonds about to mature. Arrangements are being made with the chartered banks for the carrying out of the conversion plan, and, after the latter has been completed, it may be necessary (it is stated) to arrange a further loan in which new money will be required. It will be remembered that the Loan Act, passed at the last session of Parliament, gave the Government authority to borrow $350,000,000. The present conversion plan is designed only to meet the maturities of which we have spoken. We believe, as we have indicated before today, that it is possible for the Government to raise such part of the larger sum named as it may require by means of a domestic loan open to all comers. And we shall look with confidence to those entitled to avail themselves of the conversion plan to give, by their alacrity in doing so, an indication of the readiness of the Canadian investing public generally to put their money in Dominion Government securities. — J.

COBWEBS

Mr. Angus McLean, the efficient manager of the Bathurst Company has been mentioned as the representative of the Maritime Provinces on the directorate of the Canadian Government Railways.

The government's employment chart shows more people at work in Canada now than at any time since December 1920.

It is good news that the printers' strike in England is about settled. Any stoppage in the use of paper is putting grease on the rails and sand in the bearings of the train of progress in industry and business. Let's put the sand on the rails and grease on the bearings and be on our way.

Fires in B. C. have been very bad this year. We don't hear of many idiots setting ripe grain fields ablaze. Products of the forest are only second to those of the farm. The forest must be protected.

Many a silent or spoken thought of regret and loss has passed since Lord Northcliffe left this world. Probably English journalism, which has bred many a leader, has known no finer figure nor greater force. A man of character, energy and peculiar foresight is lost to the Empire.

CHIEF FORESTER EVER ALERT

The possibility of devastation through forest fires persists in an alarming degree according to Mr. Gustave Piché, Chief Forestry Engineeer. Speaking to the Telegraph this morning, he stated that there was no reason to be too optimistic because of the fact that forest fires had not done the damage this year that had been recorded in former years. "The peril is not over and reports received from some of the forest rangers, though not announcing any outbreaks, tend to prove that there are regions menaced through the constant drought. For instance, in Temiskamingue, there has been no rain for some time and any spark would start a conflagration. Generally, however, the forest protection regulations are being well observed. The period is now becoming more dangerous due to the fact that blueberries pickers are entering the wood. The hunters will come next and until the time the trees have lost their leaves there is no reason to be too happy."

Regarding the damages done by the bud-worms during the present season, Mr. Piché said they had played havoc in all the forestry limits. They had first started in the western part of the province had gone north and then south. Finally they had been pushed easterly and form the Eastern Townships to Gaspé, they were now doing considerable harm to the trees. In many cases the trees attacked could be used, but quite often it was so affected that it became useless for pulp. In the United States, Mr. Piché said that the losses would be terrific. The plague had been conducting its nefarious campaign for eight years and little by little the damage was increasing, until now it would take centuries to repair. This showed, according to Mr. Piché, how important it was to preserve the national domain and how much care should be exercised in protecting it, at least against damages resulting from forest fires, which, in the great majority of cases, originated in carelessness.

Steer your boat into the breeze and stop watching what the other guy is doing while your own sails are flapping.

First Prize* Essay on Forest Conservation

By P. SWANSON, Timmins, Ontario

No question faces Canada today of such national importance as the question of Conservation and Preservation of Natural Resources. The best minds of the Dominion should be fastened upon it. Men of vision and courage are already speaking with a frankness that is reassuring; these are the men the Dominion needs—men who through wide experience and sound judgment, foreseeing the future, have the courage to speak and act in the present. Especially are such men needed in dealing with the problem of forest protection. It can be said with a certainty that forbids dispute that, unless the leaders of our nation act with both vision and courage, the forests of Canada will be as a tale that is told.

When we remember that the industrial life of Canada depends to an unique degree on our forest wealth, is it any wonder that the far-seeing men are crying for urgent protective measures to be taken? With the complete depletion of our timber lands, it takes no imagination to calculate the consequent detrimental effects on many of our greatest industries, e. g., lumbering, ship-building, mining (underground timbering), the saw-mill, the pulp and paper mills; factories engaged in the production of equipment of the above industries, transportation both rail and sea. In short, the industrial life of this country would collapse. Forest Protection and Preservation is a question of paramount importance; it is the greatest economic problem facing this young country.

Nowhere are the facts so startlingly arresting. A few will suffice. Canada possesses today 1,900,000 square miles of soil covered with forest, roughly one billion acres, yet in the past seventy-two years, the life-time of one generation, two-thirds to three-fourths of our timber wealth has been destroyed by fire; in other words, 1,000,000 square miles has been denuded of its standing timber. What does that mean! A child can answer the question—and fire is only one agent of forest destruction!

Another fact: East of Cochrane along the Transcontinental to La Tuque less than 1,000,000 cords have been cut and hauled to the rail. Yet 20,000,000 cords of wood have been destroyed by fire! Is forest-fire a great menace? Do we need more adequate forest protection from fire?

Right here, bear in mind that the appalling loss caused by a fire through virgin forest is not the only loss suffered through fire. This fire-swept area becomes a fertile field for another fire. The fact is indisputable that repeated fires over the same area are most prevalent. Witness the Cumberland area in Nova Scotia, the Miramichi in New Brunswick, and the Porcupine in New Ontario. What are the results of the repeated fires? These: the remaining seed trees are wiped out and all thrifty young growth is destroyed. The truth is that the repeat fire is as disastrous as the original fire. Another fact: During the fall and winter of 1920 and 1921, freight on a cord of pulpwood from points along the T. & N. O. and the Transcontinental in northern Ontario to pulp-mills in the United States was $16.00: the price paid for this cord, cut and hauled to the rails, ranged from $14.00 to $20.00. This for wood as small as 2½ inches in diameter. Were the pulp magnates of the United States eager to get our fee land wood? Is forest fire the only danger threatening our timber supply? Again: With the exception of two large companies the larger mills of the United States have an adequate supply of pulp from *their own timber lands* for only a very few years! United States pulp mills use 5,500,000 cords of wood each year! Where are they going to get their future supply? Do Canadian forests and Canadian industries need protection from fire alone? Will they need it more in the future? Yet another fact: In one timber limit in the Province of New Brunswick, 65 per cent. of the standing timber was destroyed by the spruce bud-worm. This is the insect that destroyed 50 per cent. of the spruce and fir stand of Maine. It is making headway in North-eastern Quebec, where it is followed by the black beetle which attacks the balsam fir. The bud-worm is only one of many parasite pests, and there are still left other agencies, e. g. the wind which causes tremendous loss—and people think that more forest protection is the mania of a few!

The truth is—let us be frank—that logging operations conducted each year throughout the Dominion is a direct attack on the capital wealth of our forest heritage. Whatever normal growth there is, is totally offset by the tremendous losses caused by fire, insects and other devastating factors. The above facts are well known. Every close observer of our forest life knows them to be true. They are repeated here to emphasize the facts and they are facts that cannot be over-emphasized. True as these things are it may well be asked, how can they be remedied; and this after all is the supreme question. What measures can be taken that are practical, workable and capable of enforcement, which will preserve, or tend to preserve our forest life?

It will be conceded by the great majority of people that the forest fire is by far the greatest menace threatening our timber supply today. For a proper solution of this problem, the problem of the forest fire, the essential aim is the *total prevention of fire*. Failing this, we must direct our attention to more efficient methods of fire fighting, with its subsidiary problem of eliminating all factors contributing to the progress of this awful menace.

It is imperative in a study of this question to distinguish carefully between *direct* causes of fire and factors contributing to its progress. It has been stated and stated often that logging slash and debris is a fertile cause of fire. This assuredly is *not* the case, but is perhaps the greatest factor to contributing to its onward journey. The chief direct causes, I think, are three, namely, carelessness on the part of settlers burning "slash" in all newly-opened districts; carelessness on the part of intruders such as fishing and hunting parties, prospectors, surveyors, river-drivers in our immense timber areas during the dry summer season; sparks from smoke-stacks of engines whether locomotive or stationary, possessing defective screens. Among those classified as intruders, river-drivers may not properly be entitled to the term, as their work is closely related to an industry based on forest life, but the others are intruders and nothing else; they have no appreciation of the care that must be exercised while journeying through the woods in summer; they have no love for the forests apart from the profit they derive. Other causes there are undoubtedly, e. g., lightning and incendiary, but they are negligent compared with those stated above. An examination of each, with possible remedies for their extinction, will prove profitable.

Carelessness on the part of the settler in burning slash is a more fertile cause of fire than is generally believed. Only the other day, one of the leading officials of one of our greatest pulp companies stated that fires resulting from spread of a settler's burn were negligible. The facts are not with him. How does he explain that the fires that originate far from where man lives are few, very few, compared with the fires that have worked from the settlers' burn into some great wooded limit, in short, has had its origin in carelessness on the part of the settler? This carelessness is easily explained. There is a deeply-rooted belief among settlers that fire is a beneficial thing, that land can be more quickly and easily cleared where fire has swept, provided the available standing timber has been utilized. It cannot be denied that from the standpoint of the settler he is right in so far as his own land is concerned; but he must be awakened to a sense of public ownership, that he is only one of many, that the private gain must be effaced for the common weal. It is with reluctance that one is forced to state that you cannot educate the settler to a sense of national duty through pamphlets or signs. He must be dealt with drastically. The only remedy is simple, viz.: the imposition of a heavy fine on all settlers who fire without a permit, and those who do not carry out the conditions of the permit. A permit demands that a "slash burn" must be watched by men sufficient to keep it from spreading. This part of the permit is honored more in the breach than in the observance. A strict watch, while slash is being burnt, is absolutely necessary, and any settler not living up to the conditions of the permit should be heavily fined. One or two fines will educate the settlers of a district more quickly and thoroughly than any other method.

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* $500.

The second major cause of forest fires is the carelessness of all those who enter or journey through the woods in the dry summer season, either for pleasure or work, e. g. fishing and hunting parties, prospectors, river-drivers, etc. They lack intimate personal knowledge of the disastrous effects of their negligence and therefore might be rightly termed intruders. It has been suggested that such intruders should only be allowed entrance into the woods by means of permits issued by officials of game clubs, and by officials of the Crown. This undoubtedly would be a wise move.

The two chief faults of these intruders are negligence in extinguishing camp-fires and carelessness in smoking—faults which cannot be eradicated without the passing of certain legislation. Last summer I witnessed a forest fire of considerable dimensions caused by a river-driver carelessly throwing away the butt of his cigarette. In the Olympic Peninsula, Washington, the United States Secretary of Agriculture has forbidden smoking. Canada can do no less. Each province should pass legislation, heavily fining those found guilty of smoking in our forests and all those found guilty of carelessness in extinguishing camp-fires. Private rights must be sacrificed for the common weal, and if not willingly, then by compulsion.

The third major cause of forest fires is defectiveness in the screens of smoke-stacks, whether the stacks belong to a railroad locomotive or to a stationary engine in a saw-mill. Facts need not be cited to prove this. Take a trip from Hearst to Fitzpatrick on the Transcontinental during the summer months and ample evidence will be forthcoming. Every stack should be inspected by an inspector, at the commencement of the summer season, especially the stacks of railway locomotives that are often used at various points to shunt cars of pulp or ties; these are usually locomotives whose days of usefulness are almost past, and therefore not well equipped. The remedy is simply matter of inspection and should cause no trouble. Under our present system the stacks are inspected once a year by officials appointed by the railway companies themselves. The unsatisfactory nature of such an inspection is obvious; moreover, the inspection is close only of those engines operating on the main "runs." The very engines that are used for shunting purposes at various points along the line of railroad should be most closely inspected. They operate in the very heart of the timber district. An independent inspector should be appointed answerable to the Government, with full authority to inspect all stack screens in a district, whether it be that of a railroad locomotive or that of a saw-mill. If necessary, each inspector should have one or more competent assistants.

Another cause of fires which is more or less of a temporary nature, is the careless burning of a right-of-way "slash" along the lines of a new railroad. A great number of fires can be traced to carelessness during railway construction. During such construction a special fire control should be put on the new line during the dry summer season. Close co-operation between the constructing company and such fire control will eliminate all danger.

Closely linked with the above causes and the remedies proposed for the specific misdeeds is an organization which has been built up primarily for the purpose of preventing fire, though, as a fighting force, it has proved its worth, namely the fire-ranging system in vogue in Eastern Canada. Is the present system capable of improvement? In some respects, yes!

Each year about the first of May, men are sent throughout the country to act as fire-rangers. They stay on certain beats which they travel regularly till about the middle of September. These are the men that issue permits to settlers and are in constant touch with the summer intruders into our forests. A great number of these fire-rangers are students of our universities, and have no intimate knowledge of practical ways by which to combat fires; on the other hand they possess intelligence, initiative, decision, and for the most part are thoroughly interested. To offset their lack of knowledge, it would prove of the greatest benefit, if the rangers of a district were called together by the Chief of that district one week before they go on their routes, during which he would give practical talks and illustrations of the nature of their work. He should impress on them the importance of knowing minutely the topography of the area they patrol. The knowledge of the positions of lakes, creeks, sloughs, swamps, saves useless fighting and hard work. He should know when and how to back-fire, call out men, the benefit of early morning fighting, the special effort that must be made against ground fire, especially in our pulp areas where the fires eat through the muskeg till they reach good feeding ground when they burst forth again and destroy more timber. A week spent in such a way would be of tremendous advantage to every fire-ranger, student or otherwise.

In every fire district the Chief Fire-Ranger has his head-quarters at some central point but he is not in direct touch with his fire-rangers. This is a serious drawback once a fire has started. As soon as possible after a fire has started, a sufficient force should hasten to the threatened point to subdue it or limit its range. Under our system in Eastern Canada this is practically impossible. To remedy this there should be at least three stations, situated on commanding eminences which would be in telephonic communication with the Chief at headquarters. Their duty would be to detect fires and to report to the Chief where fires were starting. Equipped with range smoke-detectors, they would give the position of a fire to a nicety. The rest could safely be left to the Chief. Certain districts, in order that the whole area might be covered need more than three such stations. When this is so, build as many as the fire district demands, but there is hardly any district in this country that could not be well watched by five or six such stations.

The fire-ranging system has been discussed at length because it is the only system that can control the first two major direct causes of forest fires, namely, settlers' slash-burn and intruders' fires. A ground organization is imperative to cope with these two causes, and nothing else can take its place. It has been stated that the aeroplane will do away with all ground organizations. For reasons that are obvious from what we have said, this can never happen. As a means of preventing fire the aeroplane is useless; as a means of fighting fire, it is only one of many; as a means of detecting fire it is invaluable, especially in large virgin areas. The aeroplane has its place in forest protection but its sphere is limited.

It is hardly necessary to add that every fire district should be equipped with track speeders, power launches for rivers and lakes, and portable gasoline pumps. Their usefulness has been proved. A district without them is far behind the times.

Prevention of forest fires is the outstanding problem in all discussions of forest protection. Yet, it is an essential part of forest protection to eliminate every possible help to a fire once it has started, and to fight it as effectively as possible. Unquestionably the greatest aid that a forest fire receives is the immense logging slash and debris that covers areas of our tree-covered soil. More scientific logging methods must be followed especially in our pulp areas. In these areas it is a common sight to see tops of from eight to ten feet in length with diameters of four, five and six inches left after a season's operations. This is a tremendous waste of wood. The fault lies that in most pulp areas in Canada the log lengths are twelve and sixteen feet. By the adoption of the four-foot length much wood would be conserved and an immense log slash eliminated. It is bound to come—why not adopt it now?

In the immense areas throughout which logging operations are carried on, the log slash lies, a veritable fire-trap, in which, if a fire once originates, all fighting forces are useless. Each province should pass legislation compelling every owner to burn his season's slash. Since the piling and burning of this slash would be done on the property of the owner, of necessity he would watch the slash burn with the utmost care. With the elimination of this slash, forest fires would never make the headway they do under present conditions.

Forest fires have written their name large on the map of Canada. From Atlantic to Pacific, tremendous areas have been devastated by the ravages of this ruthless monster. No more dismal sight presents itself to the eye of the spectator than the district forever rendered useless by the passing of a mighty conflagration. No government which has the interest of its people at heart, can afford to neglect the problem of forest protection. For this reason we have dealt at length with specific remedies and means of control to offset causes of forest-fires and forest-fires themselves.

Yet, forest-fire is not the only menace threatening Canada's forest heritage. Insect pests that visit certain areas periodically constitute a grave menace, chief of which is the spruce bud-worm. Facts have already been cited showing the destructiveness of these pests. The remedy lies wholly in inspection. It must be borne in mind that the bud-worm is a periodical pest. Rigid and careful inspection is imperative. Every timber district of each province should have an inspector with authority to secure such assistance as he deemed necessary. His duties would be, not only to watch carefully for the slightest evidence of the bud-worm and other pests, such as the black beetle which follows in the wake of the bud-worm, attacking the balsam fir beneath the bark and is therefore particularly pernicious—but he must, as well, inspect logging operations in each district to see that tops of too great size are not left, that logging slash is properly burned, and that all dead and straggling trees are cut during a season's operation. As is well known, these dead trees are veritable homes for the parasitic pests; yet we allow the operator to leave them standing year after year. These inspectors must be practical foresters and the salary must be sufficient to tempt the very best men. The government that would allow the appointments to become a reward for political service hardly understands the functions of government. Careful and rigid inspection is a prime necessity in safeguarding our timbered areas.

In any discussion concerning the Conservation and Preservation of our forest life, the large amount of pulp wood annually exported from our fee land holding to the United States must be regarded as a great menace to our future supply. We have cited the case of the money actually offered per cord during the fall of 1919. That one fact is significant of the eagerness and the need of the pulp-mill owners of the United States. Multitudes of facts, the words of the leaders in the United States industrial and political life can be arrayed to prove the need of the pulp-mills of that country for our wood, but the purpose of this discussion is not to establish a case. That is established beyond dispute. It is the purpose of this discussion to suggest practical and effective means of forest protection. To protect our country from suffering from this great annual flow to the United States, there is only one remedy, namely, an export duty heavy enough to keep our own fee land wood in our own country.

It may be advanced that this would work a hardship on the settlers, insomuch as the price offered by United States owners competing with our own pulp-mills, gives the settler a fair chance of obtaining a fair return for his wood when cut and hauled to the rail. It must be remembered, however, that competition is very keen in this country itself, and every pulp district has at least two or three mills. Even if the companies agree on a fixed price, the settler can refuse the proffered price, and ultimately will benefit by greatly improved prices. If there is one thing that can be prophesied with certainty, it is this: that standing timber is increasing in wealth by leaps and bounds with the passing of time. An export duty on all pulp wood will prove no drawback to the settler. Legislation should be passed imposing such a duty immediately.

In passing, it might be added that in large virgin timbered areas the killing of beaver should be strictly limited. Beaver dams and meadows form a natural barrier to fire and their value can hardly be overestimated. In addition, the beaver cannot be regarded as an animal destroyer of forest-life such as the porcupine, which in some districts is a menace. Right here let us say that, if such animal destroyers of forest life become too numerous, the remedy is simple: a government bounty for the death of each such destroyer would quickly reduce their number.

It is a sad commentary on the public intelligence of Canada that the question of forest protection has aroused the interest of very few. Only when some great disaster, involving the loss of life, such as took place in the Cochrane and Matheson fires, visits a section of our country, is interest gained, and then only for a few weeks. An awakened public conscience can force any government to take strong and immediate action to protect the greatest national asset this Dominion possesses. It is the bounden duty of the great newspapers of Canada to see that the public conscience is awakened to the importance of this question. It should hardly be necessary for forestry branches to pay for inserted advertisements. Ringing editorials should be hurled broadside upon a lethargic and sleeping public. A newspaper exists for more than profit. It plays more than the mere part of transmitting news. Surely, surely, they exist to mould and fashion public opinion, to lead the public, not to follow, and in no sphere is there such a fertile field to exercise their talents as in that of forest protection.

Schools and universities, especially the public schools, should impress upon the youth of this country the value of our timber and our forests. In ancient Greece, during the age of Pericles, it was said that every free male was capable of holding any public office. We have not yet reached that ideal state, but surely we can educate the youth of our country so that, when they become citizens in the full sense of the word, they will have an intelligent conception of the value of our natural resources. Sweden has done so. What Sweden has done, Canada can likewise do.

Above all, there must be thorough co-operation throughout Canada of all agencies that have forest protection for their aim. Federal and Provincial Governments must work in harmony with each other on this important question. Insofar as local conditions will permit, legislation, affecting the welfare of our forest life should be uniform throughout the Dominion. Wise governments will see to it that we benefit by the experiences of the past, that legislation will be adopted to protect the great natural resources, of which we are so justly proud, in order that future generations will arise and call them blessed.

Reforestation, properly speaking, does not belong to this discussion. It aims not at conserving the present forest areas, but at procuring an adequate supply for the future. One concerns the present. Suffice to say that re-forestation is taking place in many of our provinces under government control, and many private companies are undertaking it on their own initiative. The country would indeed be sadly behind the times if she neglected reforesting her denuded limits.

To sum up broadly: heavy fines should be imposed on those violating existing laws; new statutes should be placed in the statute books of our country and strictly enforced, dealing with the carelessness of those who journey through the woods in the dry summer season; an export duty on fee land wood; fire-ranging system more closely co-ordinated and well-equipped; more scientific logging operations must be adopted to eliminate logging slash and debris; rigid inspection of timber in each timber area throughout Canada; an aroused public opinion by means of newspapers and schools; close co-operation of all agencies existing for the purpose of securing forest protection; uniform protective laws throughout Canada; reforestation of denuded areas must take place on a far larger scale.

It is the fashion for public speakers in Canada, especially political platform orators, to speak grandiloquently of the boundless resources and inexhaustible wealth of the Dominion. Far from being inexhaustible, boundless and infinite, the forest wealth of Canada is fast approaching the point of depletion. The public is led astray by the glittering generalities of demagogues whose knowledge is less than nothing and therefore dangerous. Impress on our political representatives the importance of our forest life, and if the voice of the people of Canada speaks with sufficient strength and clearness to the politician of our day, *vox populi* becomes *vox Dei—mirabile dictu!* Then we may expect action.

The tragedy of the whole situation lies in the fact that we may take protective measures too late. The cry of "too late" re-echoes through the corridors of time, while powerful city walls are tumbling and mighty nations crash in ruins. Let us in Canada see to it that the voices of a few men crying in the wilderness do not pass unheeded. By united public effort, the forest life of our country can be preserved. It must be preserved. Without it, our economic and industrial life will be paralyzed; the bright future that opens before Canada will become darkened, and the hopes of all lovers of our land will become blasted. With the Preservation and Conservation of all the tremendous natural resources of this country, Canadians can face the future with the utmost confidence, secure in the belief that in the years ahead Canada will gradually emerge from its swaddling clothes, assume the toga of manhood, and take its place among the first nations of the earth.

SAFETY IS PART OF EFFICIENCY

Every foreman takes a natural pride in the efficiency of his particular department. It means that he is not only doing his own work well but he is inspiring the men under him to do their work well also.

But real efficiency is broader than most of the foremen apparently realize. Efficiency means getting the work done in the most thorough manner at the lowest cost, and cost includes money, time and material.

So efficiency means getting a job done in the shortest time with the least labor and with the smallest amount of material. Most of the foremen in the mill are highly efficient measured by this standard.

But efficiency covers more than that. A foreman may be careful of time, may be careful of material, and yet miss real efficiency.

Very few of the foremen figure the accident reports as having anything to do with the efficiency of their department. If men are continually getting hurt and have to lie off, the efficiency of that department suffers. Safety is as much a part of efficiency as doing a thorough job or saving money, time or material.

The foreman is the only man who can make the mill safe. No amount of orders, or posters, or signs, can prevent accidents, but the foreman can. Of course, accidents will happen, but if the foreman is fully alive to the necessity of safe operation and keeps continually impressing it on his men, the accidents in the mill can be reduced 75 per cent.

Take, for instance, the figures for 1921. The loss of time through accidents was 13,586 hours or 1,698 days. Taking roughly 300 working days to the year, this is over five years of time lost through accidents in the year 1921. Put in another way, the loss of time through accidents came to 15.83 hours for every man in the mill — almost two whole days. The total money loss was $8,831, an average of $10.30 for every man working.

If the accidents in each department were charged against the efficiency of that department, the figures would tell a different tale. While the actual work is well done and efficiently done, if the accidents are not counted in, the efficiency in many cases is not high if the accidents in a department are figured against that department.

The prevention of accidents is just as much a part of a foreman's job as getting the job done. Getting a job done safely is just as important as getting it done well.

The foremen are the most influential class in the mill. If they take an interest in safety themselves, and use their great influence for safety among their crews, a high standard of real safe efficiency can be attained. Safety is nearly all up to the foreman.—The Broke Hustler.

Causticizing in the Presence of Silicate

By RALPH H. McKEE and THOMAS H. CHILTON
Department of Chemical Engineering, Columbia University

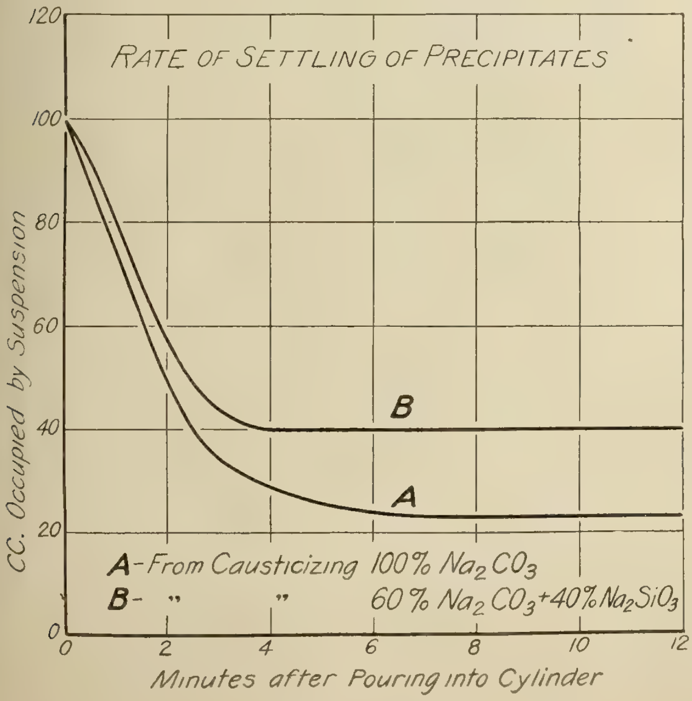
It has been stated by Griffin and Little,[1] by Beveridge,[2] and by Sutermeister,[3] that the conversion of the soluble sodium salts, obtained by leaching the ash in the soda process of making paper pulp, back into sodium hydroxide, may be rendered incomplete or even impossible if there is present silica in large amounts in the material being treated. Since the materials (e. g., bamboo) being currently proposed as substitutes for wood in making pulp generally contain more silica than wood does, an investigation was entered upon, to determine the extent of the effect of silicate upon the reaction between lime and sodium carbonate.

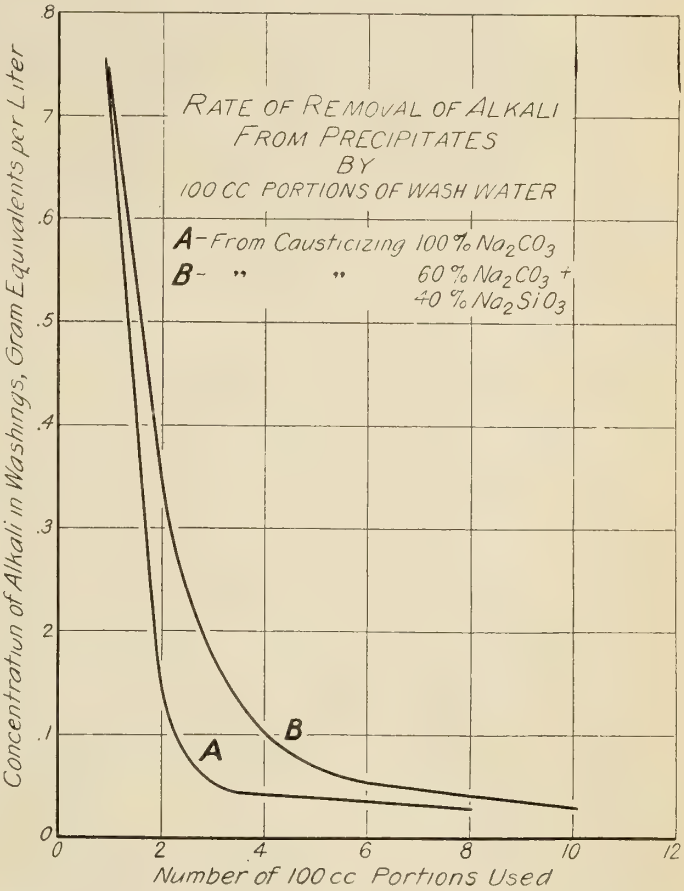
This investigation was confined largely to experiments in which solutions of sodium carbonate plus sodium silicate, prepared in several ways, were acted upon by slaked lime in excess, at room temperature, and on a steam bath, generally for one hour. The completeness of the reaction was judged by the usual method of finding the "causticity," or percentage of alkali present as hydroxide, by means of a double titration, with phenolphthalein and methyl orange.

As was to be expected, a large number of variables were found to influence the reaction; but, as with most reactions, time and temperature were all-important. Other variables were: the concentration of the solution, and the proportion of silicate present; the mode of preparation of the silicate solution, and the treatment accorded the mixture with carbonate before the lime was added.[4]

The results of the experiments performed, affected as they were by so many variables, some of which could not be measured quantitatively, call almost for individual interpretation, and they need not be reported in detail. They may be summarized, however, as follows.

Under the conditions which customarily result in a high yield of caustic from carbonate alone,—agitation for one hour at 100 deg. C., — a poor causticity was generally obtained when silicate was present. In every experiment where it was tried, however, it was found possible to obtain high causticity by extending the time of the reaction considerably beyond this period, even when there were present four equivalents of SiO_2 to five of CO_2. A few experimental results are given to illustrate these conclusions.





From mixtures made up, with 200 cc. of water, so that the proportions of reacting materials per liter were:

Na_2O	38.8 grams	1.25 gram equivalents
CO_2	22.0 grams	1.00 gram equivalents
SiO_2	24.4 grams	0.81 gram equivalents
CaO	54.0 grams	1.92 gram equivalents

causticities ranging from 78.4 p. c. to 83.7 p. c. were obtained, under conditions which yielded 91.9 p. c. to 93.9 p. c. for carbonate alone. By allowing the reaction to continue for from two to four hours, a causticity of 92.0 p. c. was obtained from the carbonate-silicate mixture. This difference in results due to silicate was especially striking with solutions made, as were the above, from commercial 40 deg. Be. water-glass, having a composition approximating $Na_2O.3SiO_2$; but it is to be seen with mixtures from other sources, as another example will show. With a mixture containing, per liter:

Na_2O	38.8 grams	1.25 gram equivalents
CO_2	16.5 grams	0.75 gram equivalents
SiO_2	15.05 grams	0.50 gram equivalents
CaO	36.4 grams	1.30 gram equivalents

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[1] Chemistry of Paper-Making (N. Y., 1894), p. 158.

[2] Paper Maker's Pocket Book (N. Y., 1911), p.

[3] Chemistry of Pulp and Paper Manufacture (N. Y., 1920), p. 85.

[4] Cf. Le Chatelier, La Silice et les Silicates, (Paris, 1914), p. 402.

made by fusing quartz powder with soda, a causticity of 85.0 p. c. was obtained by the procedure which is followed for carbonate alone,—one hour at 100 deg. C.,—but by allowing the mixture with lime to stand overnight before heating for an hour, 95.7 p. c. was reached. The filtrate obtained in this last treatment was satisfactorily free from silicate, as well; for the filtrate plus some washings contained, per liter of original solution:

NaOH	41.88 grams	1.047 gram equivalents
Na_2CO_3	2.53 grams	0.048 gram equivalents
SiO_2	0.059 grams	0.0019 gram equivalents

Similar results, but with less striking differences, were observed with smaller proportions of silicate. It thus appears that it is essential to have the reaction longer with a carbonate-silicate mixture than with carbonate alone, if normally complete causticization is to be attained.

As shown by the accompanying curves, the precipitate from a carbonate-silicate mixture, obtained under favorable conditions, was found to settle just as readily as one of straight carbonate, though it had a greater bulk; and it could be washed just as free from alkali, though about 50 p. c. more water was required.

Insofar, therefore, as it is justified by experiments with synthetic mixtures the conclusion may be drawn that it is possible to obtain good causticization of soda solutions containing silicate even in large proportions, by allowing sufficient time for the reaction to go to completion. A study should be made of the rate of reaction, with the particular materials being used, for the rate is influenced by other variables, as enumerated above.

ON TERRA FIRMA AGAIN

The Greeks had a pleasant fable of a strange creature that was powerless just so long as you kept him up in the air, but once let him touch old mother Earth, and his strength became invincible.

We too are helpless whenever and so long as we lose touch with the earth. But let our feet stand on hard ground, let our toiling hands labor in the all-nourishing soil and we are unconquerable.

It is so with all human affairs, especially so of economics (household management), and (by implication) the management of our greater home, the commonwealth.

Jeremiah Gloomigus has had his innings long enough, prophesying calamity. The time for him to have done that was in 1919, when business was literally up in the air, sailing around on bright-colored, gas-inflated balloons, called "money."

The wind, the gas, is out of those paper balloons now, and the force of the impact was proportioned to the height from which business fell. When it hit, it hurt. But the shock knocked all the wind out of it. Business men were forced to look around them, and were astonished to find themselves on, not under, the earth.

Sober thoughts usually come the next morning. The world in general has learned that steady prosperity can come only by Work and Thrift. We would not if we could go back to the war-time sham-prosperity based on a scarcity of goods and a plethora of stuff that looked like money.

There is much sound sense in the old story of the poor farm hand. His aunt died and left him $500. He quit work, "blew in" the legacy, and came back to work again. A second aunt died leaving him $500. Again he quit work, "blew in" the legacy, and again came back to work. One day as he was out in the field farmhanding, a message came that his uncle had died leaving him $1,000. His face blanched and he faltered miserably, "Have I got to go through that again?"—The Caravel.

EMPLOYMENT IMPROVES

Pulp and Paper Products

Employment in June in the pulp and paper industries continued to increase, though more moderately than during April and May. The 466 firms making returns, whose pay-rolls included 48,367 workers, had enlarged their staffs by 287 employees since their last report. This gain was recorded wholly by pulp and paper manufacturers, 84 of whom indicated a combined working force of 24,163 persons. In printing and publishing, 289 concerns registered a group pay-roll of 18,642 employees, a slight decline in comparison with their May staffs. A minor change only was shown in the production of paper goods, the 93 makers reporting employing 5,562 persons as compared with 5,577 workers on May 31. Paper mills in Ontario, Quebec and British Columbia absorbed the additional men employed, there being slight declines in personnel in the Maritime and Prairie districts. The tendency during June of last year had been downward and with few exceptions continued so until the middle of October. The indez number at that time stood nearly 7 points lower than for June 30 of this year.

Logging

The release of large numbers of men was reported in this group during June, reflecting the completion of river driving operations, mainly in Quebec and Ontario. The aggregate pay-roll of the 159 concerns reporting was 10,769 persons, in comparison with 13,011 at the end of May, a contraction of 17.2 per cent. This shrinkage was rather less extensive than that recorded during the corresponding period of last year, but the level of employment for the period under review was somewhat lower than on June 30, 1921. Employment in the logging group remained dull until the middle of August of last year, following which a period of marked activity set in, lasting until the middle of February, 1922.—Bulletin, Dept. of Labor.

MORE EMPLOYMENT, MORE PURCHASING

During the first half of the present year, there was a marked improvement in the employment situation throughout Canada. With the exception of two or three slight set-backs, principally in the latter part of January and of March, the percentage of employment has continued to increase steadily. A number of factors have contributed to this increase. In the first place, immigration fell off very considerably during 1920 and 1921, and consequently at the beginning of the present year there were fewer men to be absorbed into the various branches of industry. The beginnings of improvement in business, too, created a demand for the services of more men in trade and transportation enterprises. The speeding up of certain branches of manufacturing called for additional help, especially in those industries which had been closed down entirely, or which had been operating on a part-time basis. The lumber and pulp industries, for example, absorbed large numbers, as did also the mining industry, and the construction and maintenance of highways and railroads. The increase which took place in building construction also helped the situation very substantially. The Royal Bank Letter.

If you wish assistance in your problems tell the world about them; your fellow-man is no mind reader.

The Paper Industry In Sweden

Letter from Dr. Hugh P. Baker, Executive Secretary American Paper and Pulp Association, Who Is Studying Conditions Abroad

Gavle-by the Baltic, July 10. — The tremendous importance of the wood using industries to Sweden was made graphically evident to the American visitors during a trip into the paper and saw mill region of northern Sweden, and the economies effected by the utilization of what would be considered waste by the American mills were not the least notable phase of Scandinavian methods.

A trip to Sundsvall was the first real visit to the paper making regions of Scandinavia. Taking a sleeper one evening, we reached Sundsvall early the following morning. J. W. R. Lilliestrale, works director for Wifsta Varfs, A. B. (A. B. means Inc.) was on the train and took us in hand Wednesday morning. At Sundsvall we were joined by K. W. Sundblad, engineer for Wifsta Varfs, A. B., and they had a tug boat ready for us in which we went about the harbor, around which are located numerous sawmills (37) and pulp mills. The port of Sundsvall exports annually 150,000 standards (165 cubic feet to a standard) and 300,000 tons (all tons referred to in Sweden are long tons). Minister Axel Wallenberg is president of this company. They own over 500,000 hectares (2.47 acres equals 1 hectare) in Sweden and 10,000 hectares in Norway and drive some of their timber 300 miles.

In driving, which they call "floating", they lose two to three percent of the timber, probably because of the many small pieces. About eight million logs come down the river annually. In the Dala Alven region (Alven means river) there are about three cubic feet per log, which in 1920 cost about 2½ Kroners per log ($1 is now worth about 3.80 Kroners). This company produces annually 57,000 tons of sulphite with 300 tons screenings and 20,000 tons sulphate and the actual time of cooking easy bleaching pulp is fifteen hours; kraft sulphite 18 hours and coal at Sundsvall, English coal, of course, costs 20 to 25 Kroner per ton. They purchase their limestone from Island of Gotland, carried on by boat, of course. Apparently nearly all of the timber and pulp producing companies purchase timber from the government. Auctions are held by the government and timber is carefully described by a pamphlet, divided usually into sixteen classes, from five inches to thirty inches in diameter. In 1921 this company bought in one lot in Jamsland 2939 stems for 8/90 per K per stem (about three or four c. per cubic foot per stem). The company uses about three million pieces per year. We visited their saw mill, interesting as they do all their sawing with gang saws, saying that circular saws are both wasteful and inaccurate, evidence of their desire for quality. They have one of the finest lumber yards I have seen, no dry kilns, for all lumber is air dried. We then visited the sulphate mills and alcohol plant. The alcohol plant is very modern, making 60,000 liters per week of ethyl alcohol from liquors from the mill. We were entertained at the home of Mr. Lilliestrale at Wifsta Varfs. Both he and Mr. Sundblad speak some English. Mr. Sundblad has drawn plans and helped to construct mills in the United States.

The Wista Varfs people delivered us by auto to the Kramsfors, A. B., people at Harnosand on the Angermanalven in the province or country of Vastermorrlands (about the same latitude as northern Hudson Bay). We were met by Birger Sundfeldt, manager of Abbola sulphate mill, son of Gustaf Sundfeldt who is general manager at Kramsfors. Twelve million logs come down the Augerman river annually for the fifty saw mills on the river and the six pulp mills. The logs run about four cubic feet to a log, taking about twenty logs to our cord and making the consumption on the river about 600,000 cords. The six pulp mills on the river make about 110,000 tons of pulp, only 10,000 of this mechanical pulp. About 100,000 horse power is available on the river, but it is only partly developed. The Kramsfors, A. B., of which Baron Mannerheim is chairman of the board or president, has two pulp mills on this river and three saw mills, makes 30,000 tons of strong sulphite and 16,000 tons of sulphate. The company owns about 400,000 hectares of land and the general cut of wood for miles in this section last year was said to be about thirty percent of normal, as the companies had their yards full of high priced wood (sounds like our conditions) but Kramsfors cut seventy-five per cent. This company owns mills at Franco near Kramsfors and at Umea.

It will not mean much to try and describe other pulp mills on the river. Kramsfors, A. B., has its own power plant and sells electricity to other plants in the district. Some mills are getting power for $40 per horse power year. The company employs interesting cable and bucket arrangements for taking saw mill waste to the pulp mills, often carrying waste a mile and more, high in the air on cables. They say it is a cheap method especially during the deep snow in winter. The company produces 1,200 thousand liters of alcohol per year. Dr. Ing. Rudolph Sieber, a German, is their chemist and is very active in their efforts to save waste. Director Sundbladt entertained us at dinner in his home, though we stayed at a small hotel in Kramsfors. The second day we visited two saw mills and the great sorting boom at Sanslan — twelve million logs came through this boom in 1920 and seven million logs in 1922. Logs are marked sometimes eighteen times on one log, with the owner's mark and the logs are separated at this boom which covers 125 acres of water and employs 700 men, and are bundled by machinery so that they can be floated to the yards and lifted by cranes to be stored for winter use. This boom arrangement allows of bundling 100,000 logs in sixteen hours. Small pieces and broken logs are sent to the small power plant nearby for fuel. This plant furnishes power and light for the boom as they work sixteen hours in shifts in the fall and must have light. A separate operating company, made up, of course, of the various mills on the river, operates the boom.

From Kramsfors we took train to Mora in Delarna to spend three days in the annual "norrlands Skogsvardsforounds Exjursion." This gave the opportunity we were seeking to see the forest and to learn generally as to forest conditions.

G. R. HALL CAINE DEPUTY-CHAIRMAN

Mr. G. Ralph Caine has been elected deputy-chairman of Messrs. Charles Marsden & Sons, Ltd. This now powerful and important concern is, like practically every other company producing paper in Great Britain, necessarily having a very anxious time at the moment, but it is a fact that under Sir Frederick Becker's direction Messrs. Charles Marsden & Son's mills are amongst the best equipped in Great Britain and Ireland.

PAPER PLANT ELECTRIFIED

The plant of the Millers Falls Paper Company at Turners Falls, Mass., is electrified. Every machine will be driven by separate motors, and the coal-driven power plant of the company will be abolished.

British Trade News

(From our London Correspondent.)

London, July 31, 1922.

Lord Northcliffe

Lord Northcliffe, who is interested in the Newfoundland mills, as well as being the head figure in the "Times" (London), is in a precarious state of health. Grave doubts are entertained about his recovery. As I write, the report on his condition is somewhat alarming.

It is interesting to recall the fact that Lord Northcliffe resigned his position on the Newspaper Proprietors' Association, sooner than be a party to reducing wages, the cause of the big strike just terminated. (See page 688)

Empire Mills' New Scheme

Recently I mentioned that the Empire Paper Mills (1922), Ltd., of Greenhithe were issuing guaranteed first mortgage debentures. Well, inside of one day four thousand applications were received totalling about £4,000,000 (roughly $20,000,000) from London and about five thousand applications from the provinces. The owners of the mill could have got enough money inside five minutes to buy the mill three times over. The directors of the mill—I send the information for the Canadian mill owners—are Viscount Rothmere (President)—a brother to Lord Northcliffe—Mr. A. E. Linforth (Vice-President); Mr. Stanley Cousins, the well-known papermaker and a good supporter of Canadian products; Mr. E. A. Sursham, of the Anglo-Newfoundland Development Co., Mr. John Cowley (of the "Daily Mirror", London) and Mr. A. Baker, the general manager of the mill at Greenhithe. Mr. Cousins is one of the men who wanted a 33 1/3 p.c. duty slapped on German and foreign paper coming into England, which he held was detrimental to the products of the Dominion and home mills. The recent rush for the debentures in Mr. Cousins' mill shows the great confidence the British public have in pulp and paper as an investment. According to the Law Debenture Corporation, of London, the list for subscribers was only open a couple of minutes.

Loss on Trading

The half-yearly report of the Bury Papermaking Co., one of the Lancashire mills, states that for the six months ended May 27 there was a loss on the trading account of £10,967. After charging interest, depreciation, etc., amounting to £5,435 the debit balance is £16,401, to which must be added the debit balance from the last account, plus dividend, amounting to £6,332—thus making a total debit balance of £22,734. This is another indication of the serious crisis through which some of the British mills have had to pass.

Canadian Wrappings

The Canadian producers of packing and wrapping papers enjoy a nice trade with the British market, but there is still room for improvement. During the past six months—January to June—39,816 cwts. of packings and wrapping arrived from Canada compared with 10,381 cwts. for the corresponding in 1921, the values respectively being £54,660 and £24,750. The competitors in the English market with Canadians are as follows, showing the quantities shipped and the values for the six months:— From Finland 143,019 cwts. valued at £181,734 (67,669 cwts. at £151,209 in 1921); Sweden 439,013 cwts. at £593,328 (171,775 cwts. at £451,771); Norway, 294,178 cwts. at £390,451 (63,575 cwts. at £183,842); Germany, 217,619 cwts. £263,129 (73,878 cwts. at £203,243); Belgium, 42,676 cwts. at £107,688 (37,712 at £137,821); Other countries 133,842 cwts. at £238,260 (55,549 cwts. at £184,216). It will be noticed that the increase of trade between the British market, Scandinavia, Finland and Germany is considerable. Canada's is also fair, but there is plenty of scope and much to do yet.

The British exports of packings and wrappings in the six months jumped to 108,164 cwts. valued at £133,339 compared with 57,968 cwts. at £192,237 for the corresponding period in 1921.

The Markets

The outlook for paper is brighter all round. Mills, however, are not all working full time, which is a sign that sufficient orders are not flowing in to keep all machinery running at the regular and recognised weekly hours. Prices are now on a par with foreign papers. Newsprint is £13.10 to £14 a ton f.o.b. London, net.

There are rumors going the circle that groundwood (moist) is getting scarce. Buyers, however, are not disturbed as stocks are plentiful at mills. Recent dealings were at £4 a ton, prompt delivery. The chemical pulp market is strong and sellers are asking higher prices.

Good shipments of unbleached chemical, chemical wet and groundwood (moist) have arrived from Port Alfred and Chicoutimi. The groundwood shipment reached 1,000 tons. Supplies of unbleached chemical from Sweden are heavy.

Railway rates are on a lower scale now in England.

CHANGING FOURDRINIER ROLLS

Some interesting and useful improvements to the 164 in. newsprint machine at the Espanola mill and the Spanish River Pulp and Paper Mills, Ltd., have been made by Mr. W. J. Hussey, the general superintendent, and Mr. Herbert Cantwell, the resident engineer. These are said to have achieved their purpose both from an economical and an operating standpoint.

Describing the changes made, Mr. Cantwell states that the table roll bearings of the Fourdrinier were hung under the shake rail as are the majority of table roll bearings today. The result was a very short bearing of about 3 in. and no adjustment whatsoever.

The change was accomplished as follows: The shake rail was cut and lowered so as to allow the bearing to be placed on its top, thereby giving a bearing of sufficient length.

Under the old method the bearings were continually wearing out and needed attention every Sunday when the machine was down, and further the roll shaft wore down long before the life of the table roll jacket was ended, also it may be added that on account of end thrust the end of the shaft would cut a hole in the rear side of the bracket thereby eliminating any up and down motion as required for the sheet.

A bearing was then conceived which would not only have an up and down adjustment, but, also, an end adjustment, and which would be sufficiently long to meet the requirements as to life. The thrust block has a flattened top which is to prevent it from turning, and if any wear occurs on the end it will make no differencec in the up and down adjustment, as there is a pocket under this end. The top of the journal is left open, and, after the roll has been placed, a ¾ in. layer of grease is applied, and this in turn is covered over with a piece a wet felt.

The greater facility and the greater accessibility of removing the rolls in changing a wire is very marked as compared with the old method.

The work described was installed nearly two years ago at a cost of $10,000, and more than paid for itself in the first year, besides giving a better edge on the sheet and allowing greater speed on the machine. There has been no maintenance on it since its installation.

A Dictionary of Pulp and Paper Mill Terms

ADDITIONS AND CORRECTIONS

Air Dried. Paper, either hand made or machine made, dried by exposure to air, either in lofts, as in the case of hand made, or in festoons in the case of air dried machine made paper. Leather board and sometimes board for special purposes is air dried by spreading the sheets on the ground in the open, now very seldom seen.

A.T.S. Animal Tub Sized. Papers tub sized or top sized with glue or gelatine.

Baumé. A hydrometer scale (See **Hydrometer**) used for liquids lighter or heavier than water. Heavy liquids start with water as zero (= Sp. Grav. 1.000) and run upwards as they become heavier (in specific gravity). Light liquids have water as 10° and run upwards as they become lighter (in specific gravity). Also spelled Beaumé.

Berlin Blue. A color produced in the beater by adding first nitrate of iron and later yellow prussiate (ferrocyanide) of potash. Often called Prussian Blue. (Substitute this for previous definition.)

Bevel Gear. A geared drive, in which the driving plane is not parallel to the plane of the driven gear. When these are at right angles they are referred to as mitre gears.

Body Paper. Refers to bulking or supporting paper of enamelled or other composite papers.

China Paper. A special waterleaf paper made in China and used by plate printers.

Copper Number. A means of determining the amount of oxycellulose present in chemical pulp, by boiling it in Fehlings solution under regulated conditions. The Cu. number is the grams of copper that would be reduced by 100 grams of bone dry fiber.

Cord. A unit for measuring wood. The common cord is roughly hewn wood or pulpwood in lengths of 4 feet, in a pile 8 feet long and 4 feet high. 8ft. x 4ft. x 4ft. = 128 cubic feet.

There are cords of other dimensions as the Quebec cord 8ft. x 4ft. x 3ft. 3in. Dealers in fuel wood use a cord which is really 1/3 of a cord. Their cord is 16in. deep — the 48in. sticks being cut in 3 pieces of 16in. and making 3 cords, 8ft. x 4ft. x 1ft. 4in. Some pulpwood is bought in 8 foot lengths. A pile 8 feet long and 4 feet high would be a double cord 8ft. x 4ft. x 8ft. It contains less than two cords of 4 foot length owing to closer piling possible with shorter pieces. Cords of pulpwood blocks four feet long or two feet long piled just as they fall into the block pile take up more space (about 160 cu. ft. per cord), so there are various piled block cords depending on the average diameters of blocks and the conditions of piling. A solid cord is the actual wood contained in a piled cord of 128 cubic feet — in the province of Ontario It is 115 cubic feet, but careful measurement shows the solid wood content to be 88 — 95 cu. ft.

Cut-To-Register. Paper so cut that watermark shall appear in stated position on the sheets.

Direct Cooking Process. For sulphite pulp. Also referred to as **Quick cook,** or **Ritter-Kellner,** from its originators. In this process, which is that most in practice today, the digester charge of chips and liquor is cooked by the introduction of steam directly into the charge. It is usually understood to mean a cooking time less than ten hours as opposed to '**slowcook**' or semi Mitscherlich of longer periods.

Distillation. The process of separation or purification whereby volatile materials are vaporized by heat and are thereafter condensed by cooling in such a way as to be delivered into another vessel. The act of converting a liquid into a vapor and condensing it back to liquid form again.

Emperor. Largest sheet made by hand —48in. x 72in.

Festoons. Paper which has been coated (see **Coated Paper**) or printed for wall paper is dried by air currents in a room through which the paper travels supported by salts and hanging therefrom in long loops called festoons.

Herzberg's Stain. A means of distinguishing fibers under the microscope (devised by Herzberg). It consists in treating the fibers on the slide with the following mixture: —

Solution A. —20 grams zinc chloride
10 cubic centimeters water
Solution B. — 2.1 grams Potassium iodide
0.1 grams iodine
5 cubic centimeters water.

Dissolve A and B separately, then mix and keep in a dark place for several hours before using, or until all sediment is settled; pour off clear liquor. Keep in brown bottle in dark. Fibers are colored as follows: — Groundwood, jute, tow, uncooked Manila hemp and any highly lignified fibers are yellow. Well cooked and bleached sulphite, soda, straw or esparto fibres are blue or dark blue, cotton linen, and well bleached manila are wine red.

Hot Pressed. Paper glazed by pressure between heater plates.

Hot Rolled. Paper glazed by hot cylinders.

India Paper. A thin opaque paper used for bibles or other volumes of many pages which are required to give little thickness. See **Bible Paper.**

Indirect Cooking. Means of cooking chemical pulp either by steam in coils, as in the Mitscherlich system for sulphite, or by heating the liquor in special heaters outside the digester as in the Morterud System (which see).

Interchangers. Means of cooling or heating liquids by countercurrent effects in double walled pipes or similar equipment; usually a means of extracting heat units from a gas or liquid to be discharged.

Jumbo Roll — The trimmed web of paper the full width of the machine rolled as it comes from the reel. Also refers to any large roll intended later to be cut into sheets or rewound into smaller rolls.

Keir. A stationary Vessel with perforated false bottom in which cooking liquors which are withdrawn at the bottom are returned at the top. Formerly used in preparing pulp from old papers.

Loading See **Fillers.** Loading paper only to add weight is presumably not done.

Lustra Cellulose. Artificial silk prepared by drawing or spinning solutions of nitro cellulose into water to precipitate or render them insoluble and afterwards denitrating by treatment with magnesium sulphide solution.

Miter Gears. See **Bevel Gears.**

Mitscherlich Pulp. Sulphite pulp cooked in a digester by indirect steam in coils inside the digester. A longer cooking time ,and lower pressure is used, but the pulp is more easily bleached than by the direct steam or quick cooking process. To be substituted for definition previously given.

Montejus. A pistonless pump for raising acids by compressed air.

Morterud Process. (From the inventor.) the cooking of chemical pulp by means of liquor which is circulated through a heater located outside the digester. Advantages claimed are that the liquor is not diluted, that there is better circulation, saving of steam, and higher yield.

Mullen Test. The reading in "points" (energy in pounds per square inch) required to burst a sheet of paper confined in the Mullen testing machine, wherein the sample of paper, properly clamped, is acted upon by a rising diaphragm of rubber actuated by hydraulic pressure. (Substitute for previous definition).

Multiple Effect Evaporation. Evaporation based on the principle that the boiling point of a liquid depends on pressure as well as temperature. The steam produced by boiling at atmospheric pressure will itself cause boiling in vessels under reduced pressure or partial vacuum. In M. E. evaporation each "effect" or unit is at a lower pressure or partial vacuum thus securing minimum loss of heat.

Pulp Boards. Cardboard made in a single web, as distinguished from cardboards consisting of several thicknesses or plies.

(To be Continued)

Technical Section

A. Properties, Chemistry and Testing of Raw Materials and Finished Products.

A-1 Contributions to a More Exact Knowledge of the Chemical Composition of Spruce Wood. PETER KLASON. **Paper Trade J.**, lxxiv, No. 18, 45-51, (May 4, 1922). Translation by Carl L. Fineman and W. E. B. Baker. A detailed historical review of the subject is given. Barium ligninsulphonate was prepared from waste liquor from the manufacture of spruce sulphite. Molecular weight determinations were made. Various groups in the compound were determined. The author concludes that spruce lignin belongs to the aromatic series of compounds, that it contains several nuclei, that it is related to coniferyl alcohol, and that the solubility of the lignin in acid calcium sulphite depends partly on its content of active carbonyl and partly and mainly on the ethylene groups. In the waste liquor the sulphurous acid is partly loosely and partly strongly combined. -I. G.

A-1 E-2 Lignin Sulphonic Acids. R. H. McKEE and G. BARSKY. **Paper Trade J.**, lxxiv No. 20, 46-48, (May 18, 1922). As a result of an investigation to determine whether there are one or several substances which occur in the wood which react with bisulphite and sulphurous acid, it is concluded that there are several of these constituents. Details of the experimental work, which was based on a series of fractional precipitations, are given.-I. G.

A-6 The Purchase of Steam Coal by Specification. H. BELL. **Paper Trade J.**, lxxiv, No. 12, 50-51, (March 23, 1922). A discussion of the various points that have to be watched in the purchase of steam on specification and the significance of the different parts of the specifications. -I. G.

A-12; K-19 Dextrin for Coating Paper. Can. patents No. 188, 639, 188, 671, WM. W. McLAURIN, Brookfield, Mass., U. S. A., Feb. 11, 1919. As an article of manufacture, a readily dissolved concentrated dextrin solution, or liquid suitable, without further treatment, as a coating, adhesive, or impregnation for paper, textiles, wood and the like, having a concentration of about 50 per cent., said solution being made from commercially pure starch and of uniform quality throughout, and having less than 10 per cent. of sugar on the weight of the dry product. **No. 188, 671.** Equal parts of starch and water are made into a comparatively smooth cream and heated in an autoclave with hydrochloric acid equal to 0.1 per cent of the weight of the starch at 280° F for a period sufficient to convert the mass into a fully converted dextrin in the form of a colorless solution, liquid at 60-70°F. -A. P. -C.

A-14 Corrugated Paper Board Tester. Can. patents No. 188, 598 and 188, 699, JOHN W. WEBB, Chicago, Ill., U. S. A., Feb. 4, and Feb. 11, 1919. (For comparison of Webb and Mullen testers see **J. Ind. Eng. Chem.**, xi, 133-138, 1919; **Pulp and Paper**, xviii, A-14, 900, Aug. 26, 1920.) Also U. S. A.-Patent 1,413,305, J. W. WEBB, assignor to Webb Tester, Inc., April 18, 1922. -A. P. -C.

A-14 Paper Testing Machine. Can. patent No. 188, 612, INTERNATIONAL BUSINESS MACHINE CO. OF CANADA, LTD., Toronto, Ont., Canada, assignee of E. BRAITMAYER, Washington, D. C., U. S. A., Feb. 11, 1919. When there is an imperfection in the paper being tested, an electric circuit is automatically closed, thereby bringing into operation a mechanism for mutilating the paper strip. -A. P. -C.

D. — Groundwood Manufacturing and Equipment.

D-0 E-0 F-0 Cellulose from Wood. R. KRON. German Patent 351,987. The raw material is passed through crushing rolls which crush the wood completely and produce a fibrous fleece or individual wood fibers in a thinly flattened condition. The material can be treated with chemicals in an edge mill or grinding mill. Only very dilute solutions of the chemicals need be used. -I.G.

E. — Acid Processes of Pulp Manufacture and Equipment.

E-1 Determination of Sulphurous Acid and Lime in Sulphite Liquors. B. DEUTSCH. **Wochbl. Papierfabr.**, liii, 314, (Jan. 28, 1922); Translation by C. J. West in **Paper Trade J.**, lxxiv, No. 20, 49-50, (May 18, 1922). See this journal, xx, 417, May 18, 1922. -I. G.

E-2 Production of Alcohol from Sulphite Waste Liquors. Can. patents Nos. 188, 636, 188, 637, 188, 638, RALPH H. McKEE, Ridgefield Park, N. J., U. S. A., Feb. 11, 1919. **No. 188, 636.** In a process of making ethyl alcohol by fermenting sulphite waste liquors, the steps which consist in adding yeast to sulphite liquor containing an appreciable amount of sulphurous acid, aerating the solution substantially throughout the fermentation, thereby maintaining the fermentive action, and recovering alcohol vapors from the exit gases by scrubbing the same with unfermented liquor. (Cf. **Pulp and Paper**, xviii, 81, E-2, Jan. 2, 1920.) **188, 637.** The process of producing ethyl alcohol from sulphite waste liquors, consisting in purifying the liquor by the action of barium carbonate under oxidizing conditions, thereby producing a sludge containing barium sulphate, separating the sludge, fermenting and distilling the purified liquor to obtain alcohol, furnacing the barium sulphate sludge under reducing conditions to form barium sulphide, and reconverting the sulphide into carbonate by treating under superatmospheric pressure with the carbon dioxide evolved from the fermentation vats. **No. 188, 638.** In a process for producing alcohol from sulphite waste liquors, the steps which consist in subjecting the liquor which contains sulphites to the action of barium sulphide under oxidizing conditions, thereby producing barium sulphate and eliminating injurious sulphur compounds, and furnacing the barium sulphate under reducing conditions to regenerate barium sulphide. -A. P. -C.

E-2; F-2 Process for the Preparation of Halogen Quinone Derivatives from Pulp Waste Liquors, and Application of said Derivatives. Fr. patent No. 508, 894, PAPETERIES BERGES, France, Aug. 5, 1920. **Chimie et Industrie**, vi, 210, (Aug. 1921). (A) **Alkaline Liquors.** After drying the quinone derivatives are obtained as pastes, extracts, or powders. (B) **Sulphite Liquors.** (C) **Liquors from Water or Steam Treatment.** The quinone derivatives thus obtained possess tanning properties and may be used for this purpose either alone or in admixture with other substances. -A. P. -C.

E-2; L-5 Sulphite Waste Liquor as a Precipitant for Artificial Threads, Ribbons, Films, or Plates made from Viscose. Can. patent No. 212,099, MAX MULLER, Finkenwalde, Germany, May 31, 1921. Same as Br. patent No. 145, 627, See **Pulp and Paper**, xix, 42, E-2, L-7, (Jan. 13, 1921). -A. P. -C.

E-2 Tanning by Means of Woodpulp Extract (Waste Liquor?). Can. patent No. 188, 358, J.K. TULLIS, Paris, France, Jan. 21, 1919. The hide is treated with a solution of an alkali bichromate and after complete penetration by the salt it is immersed in a solution of woodpulp extract. -A. P. -C.

E-0 E-2 Cellulose from Wood. (R. Kron). See D. Lignin Sulphonic Acid. (R. H. McKee and G. Barsky) See A.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-2 Utilization of Caustic Liquors from the Treatment of Straw. W. COLSMAN. German Patent 316, 147, Aug. 6, 1916. The black liquor is reboiled, mixed with various vegetable residues and subjected to the action of air in order to obtain a mass that can be spread over the ground. In this manner there is obtained a stable fertilizer which can be used at any time.-I. G.

F-4 Distillation of Black Liquor. Can. patent No. 189, 656,E. L. RINMAN, Djursholm, Sweden, April 15, 1919. The concentrated black liquor (35° Bé at 60°C.) is mixed with caustic soda (to make up for losses), and also with lime and dry distilled at not over 500°C. The temperature during different periods is maintained within certain ranges corresponding to the decomposition temperatures of the different substances in the black liquor until the substance or substances corresponding to the temperature range have been formed and substantially distilled over. Each distillate is collected separately, so that the various substances are obtained separated from one another at the dry distillation. -A. P. -C.

F-4 Sulphite Digester Mechanism: Vapor-Accumulator. Can. patent No. 189, 679, AKTIEBOLAGET VAPOR-ACKUMULATOR, Stockholm, assignee of J. K. RUTHS, Djursholm, both in Sweden, April 15, 1919. A sulphite digester plant comprising a steam boiler, a sulphite digester, a steam accumulator partially filled with water being interposed between the boiler and digester, the water space of the accumulator being connected to the steam space of the boiler, and the steam space of the accumulator to the digester. The accumulator is equipped with a superheater connected to the steam boiler. Also, Br. patent No. 144,084, May 29, 1919; Fr. patent No. 518, 153, Dec. 27, 1920. -A. P. -C.

F-5 Rinman Pulping Process. Can. patent No. 189, 655, E. L. RINMAN, Djursholm, Sweden, April 15, 1919. The Process of producing pulp consisting in relieving the raw material of air enclosed in it, boiling it in a caustic soda liquor, effecting the principal extraction at a temperature of 140-170°C, and treating the liquor during boiling with a catalyzer furthering reduction. (See this journal, xix, 452-3, April 28, 1921. -A. P. -C.

F-0 Paper Stock from Freshly Decayed Peat. A. L. BURLIN. German Patent 348, 636, July 28, 1920. All foreign matter is first removed from the peat. The peat is then placed in a cast iron cooker which is provided with a perforated bottom and a wooden cover. The mass can be stirred by means of a wooden pole. About 1 to 2 per cent. of caustic soda liquor is added and the peat is cooked for about 2 hours with occasional stirring. After cooking is completed, the material is washed with water and then treated with 2 per cent. calcium chloride solution. After an hour sodium carbonate is added and finally the solution is acidified with a very dilute solution of sulphuric acid. The material is washed till neutral, and filtered. It can be used in making dark colored paper. -I. G. Q

F-0 Cellulose from Wood. (R. Kron) See D.

G. — Treatment of Pulp and Equipment Therefor

G-5 Pulp Washing Machine. Can. patent No. 189,982, SAMUED MILNE, Edinburgh, Scotland, April 29, 1919. -A. P. -C.

G-6; K-11 Vibrator for Screening Machines. Can. patent No. 212, 095, B. A. MITCHELL, Utah, U. S. A. -A. P. -C.

G-6; K-11 Pulp Screening Device. Can. patent No. 212, 110, A. R. PAUL, Utica, N. Y., U. S. A., May 31, 1921. -A. P. -C.

G-6; K-11 Rotary Screen. Can. patent No. 212, 204, MOORE AND WHITE CO., assignee of J. A. WHITE, both of Philadelphia, Pa., U. S. A., May 31, 1921. -A. P. -C.

K. — Paper Manufacturing and Equipment

K-6 Pulper for Sheet Pulp. Fr. patent No. 519, 934, L. G. A. POTIE, Isère, France, Feb. 4, 1921. **Papier,** xxiv, 357-359, (Aug. 1921); **Papeterie,** xliii, 688, (Aug. 10, 1921). The pulp (in sheets) is fed into a hopper from which it passes into a chamber where it is thoroughly wetted by spraying and triturated by means of a powerful agitation. Means are provided for admitting steam to the chamber if desired. The pulp then passes into a truncated-cone shaped compartment in which are helical grooves as well as agitators. The function of the grooves is to make the pulp travel from the small end to the large end of the chamber, from which it is discharged. -A. P. -C.

K-7 Notes on the Beating of Paper Pulp. W. ALISON, A. Pirie & Sons, Ltd. **Paper Trade J.,** lxxiv, No. 19, 55-57, (May 11, 1922). Discussion of the theory and practical application of beating. -I. G.

K-7 Calculating the Power Consumption of Beaters. F. M. BOUVIER. **Monit. Papeterie Francaise,** lii, 788-790, (Dec. 15, 1921). Translation by A. Papineau-Couture in **Paper Trade J.,** lxxiv, No. 13, 45-47, (March 30, 1922). See this journal, xx, 484, June 8, 1922. -I. G.

K-7 K-23 Utilization of Latex in Paper Making. F. KAYE. **Paper,** xxx, No. 7, 29-32, (April 19, 1922); **Paper Trade J.,** lxxiv, No. 17, 47-48, (April 27, 1922); **Paper Mill,** xlv, No. 18, 10, 12, (May 13, 1922). Considerable interest has been attached to the use of rubber latex in paper making. It is thoroughly incorporated with the fibers in the beater, and various experiments with different kinds of stock have shown that the whiteness of the paper is not impaired. The admixture of latex with the pulp improves the texture and feel of the paper and increases the mechanical strength and folding resistance. It makes the paper water-repellent and increases the electric resistance and dielectric properties. The mechanical strength of papers made from different stocks compared with the same products when mixed with rubber latex is given in tabular form. Latex paper has been found to absorb dyes readily and for a given depth of color less dye is required than in ordinary paper. The cost of making latex paper is shown. (See next abstract.)-I. G.

K-7 K-23 Manufacture of Latex Paper. F. KAYE. Can. Patent 216, 957, March 21, 1922. (Cf. preceding abstract.) Rubber-containing latex (preserved with ammonia, formaldehyde, etc., if necessary) is added to the beater furnish after the fibers have been beaten to the extent required for the quality of paper aimed at. After thoroughly mixing the latex with the pulp, a coagulating agent is added, the nature of which depends on the nature and state of the latex, such as acetic, formic, or other suitable organic or mineral acids, or small quantities of mineral salts. The paper may be sized as usual before or after adding the latex. The stock is run on the paper machine in the usual manner.

(Continued on page 702)

UNITED STATES NOTES

Stationery manufacturers have been following closely the demand for novelty merchandise on the part of the consumer. No longer are square-cut severely plain sheets of white paper the leading sellers in stationery, but their place is being taken by colored papers of the widest variety, according to the head of the stationery department of a large Brooklyn store. Colored linings on the inside of envelopes are rampant. One envelope recently brought out in a dull, gray shade has a lining of thin silk paper patterned in gorgeous colors, designed, possibly, after a bed of roses or exotic tropical birds. In another example, a pale mauve envelope is lined with a thin paper of a violet shade, patterned with splashes of gold. Even the most business-like envelope as far as the exterior is concerned, has its gay linings, and can be bought with ink, sealing wax, feathered pen and blotting paper to match.

Officials of the American Writing Paper Company are optimistic regarding conditions in the paper market and look for increased operations in the company mills. The month of July, which has invariably shown a falling off in business during previous years, actually registered a slight increase in the volume of business done. Operations were resumed last week in the several company mills where there had been temporary layoffs due to the annual shutdown of the Holyoke Water Power Company. The headgates at the Holyoke dam have been electrically equipped so that they may be operated by electricity as well as by water wheel.

Writing from Upsala, Sweden, under date of July 15, Dr. Hugh P. Baker, Executive Secretary of The American Paper and Pulp Association, touches upon Swedish forest economy and the Scandinavian labor situation. Of the former he says: "The extent of the forests, and the manner in which they are being protected, and managed as well, means that America will face a maintained competition of Swedish paper and pulp. The forests are being handled for a maintained future production, so that the nation can for centuries produce timber products at the actual rate of growth of the timber in the forests." Labor, as affected by Socialist control in Sweden, is tending, writes Dr. Baker, towards a levelling down. Skilled labor is not any better off in the matter of wages than common labor, which is in the saddle. The Socialists, he says, seek the extension of governmental activities, even to actual operation in the forests and forest industries.

E. L. Bassett of Felts Mills, who has just returned to Watertown, N.Y., after a six months' visit in Sweden, warns American paper manufacturers to watch out or Sweden will get all their business. He directs attention to the fact that Swedish paper makers are seeking every modern device to aid production, that they are increasing the number of their mills, and that they are able to enter the markets of the world on a production cost that may only be overcome by tariff walls.

New production records, daily and monthly, were hung up during July at the International Falls plant of the Minnesota and Ontario Paper Company. The average daily production was 241.5 tons, and the highest daily run, made July 15, was 254.8 tons.

Brooklyn industrial plants are finding that the movement of freight, incoming and outgoing, is affected only to a slight degree by the strike of the railroad shopmen. Occasional delays of from one to four days have been experienced in the receipt of inbound materials, but there has been no interference with the normal conduct of business, which is holding up well in most industries during the summer. Commenting on the situation, Samuel Evans, traffic manager of the Robert Gair Company, manufacturers of paper board products, says: "We have experienced no serious difficulty in the movement of freight. We have found that conditions in the Middle West are worse than in the East, but there has been no serious delay."

Public utilities in New York State are being urged by the State's Central Coal Committee to conserve coal by using water power wherever available and by reducing power if it can be done without seriously affecting service.

In sections of the Northwest the fruit growers cover the fields with roofing paper, cutting out round holes for the melon hills. It has been found that by this practice all weeds are smothered and there is a big saving in labor for cultivation and irrigation.

Alling and Cory, paper dealers of Rochester, N. Y., have leased from the Herald Square Press Building Corporation a store and basement in the Kymson Building, West 37th Street, New York City. The lease is for ten years on space held at $18,000 per annum.

PRINTING COMMITTEE REJECTS BIDS

The Federal Government is today faced with the necessity of going into the open market to secure the large supply of paper needed for Government offices during the six months beginning September1 next. The Joint Congressional Printing Committee has rejected bids covering about 70 per cent of the Government's paper supplies, including print paper, the major item on the list. On print paper the International Paper Company bid 4.3 cents per pound, and Dobler & Mudge of Baltimore, 4.36 cents, but both were rejected because the Government now is paying 3.79 cents, and the joint committee believed it could save money by going into the open market.

The joint committee, however, awarded Dobler & Mudge a contract for 750, 000 pounds of machine finished white paper at about 6.70 cents, and the P. H. Glatfelter Company, of Spring Grove, Pa., one for 950,000 pounds at 5. 8 cents. The Aetna Paper Company at Dayton, Ohio, will supply 2,700,000 pounds of writing paper at from 9.5 to 13.16 cents, the R. P. Andrews Company, of Washington, 1,000,000 pounds of colored writing paper at about 6.5 cents.

Because of the high bids submitted at this period officials decided to call a conference of paper manufacturers and dealers here in October to meet with the committee.

UNION BAG WINS ITS FREIGHT CASE

The Union Bag and Paper Corporation of Fenimore, N. Y., has won its case in part against the Director General of Railroads in its petition for refund of demurrage charges on wood pulp, according to a decision of the Intersate Commerce Commission announced today.

The case is a complicated one, and the amount to be returned will be based on many conditions of the decision.

PULP AND PAPER NEWS

James A. Ellis of the Ontario Railway and Municipal Board has been appointed fuel controller for the Province of Ontario. It will be his duty in the event of shortage to see that there is an equitable distribution of fuel for industrial purposes and to develop plans for that purpose.

Mr. R. E. Milligan of the Seaman Patrick Company of Detroit, is making an extended trip among the paper mills and trade in Ontario.

Mr. J. R. Brough, of the firm of A. J. Brown, Brough and Co., paper agents and merchants, London and Melbourne, paid a visit to Montreal on his way to England after making a tour of the company's Australian branches. He sailed on Friday, August 11, on the C. P. R. liner Montrose.

Mr. J. E. A. Dubuc, of the Chicoutimi Pulp and Paper Co., Mr. A. M. Irvine, director of Becker and Company of America, Limited, Montreal, and Mr. Howard Wilson, president of J. C. Wilson Limited, Montreal, sailed for England from Quebec on C. P. Empress of France on August 8th. Mr. Wilson was accompanied by Miss J. K. Wilson and Miss R. G. Wilson.

The Belgo Paper Company, Limited, Montreal, has been incorporated with a capital of $2,000,000.

A visitor at our Toronto Office recently, was Mr. Chares W. Whitehouse, formerly Sulphite Superintendent of the Abitibi Power and Paper Company, who is taking a well-earned vacation before getting into harness again. We understand that Mr. Whitehouse would be interested to hear of any propositions wherein his experience of thirty years in the sulphite industry might be profitably applied. His address at present is 124 Yorkville Avenue, Toronto.

The family and friends of Mayor Battle were cheered by the news that he was so far recovered as to make it safe for him to return home, intending to come Monday, but the storminess of the day prompted a delay until Tuesday of last week. There is now strong hope that the disease has been eradicated from his system, and that he may long be spared in health to serve his home and town. The contractors for the big Chippewa power canal did a very generous and gracious act in presenting Mr. Battle with a touring car that was used by the staff, in appreciation of the co-operation of himself and his city. A gift could not be more appropriate.

Messrs. James W. Sewall and James A. Conners of the Sewall timber cruising organization, Old Town, Maine, have been at Tupper Lake, New York, as expert witnesses on timber quantities in the case of Litchfield vs. Town of Altamont. Their estimates of quantity of timber was taken as conclusive in the case in question in spite of considerable adverse testimony, the court holding that the thoroughness of the Sewall work made such decision necessary.

CLARKE DECLINES POST

Dr. Judson Clarke has declined to accept the position of Commissioner of Conservation for Ontario, at a salry of $10,000.

It is understood that Dr. Clarke's extensive timber interests prevent his accepting the proposal. He has, however, undertaken to prepare a report that may help the Government to formulate a more adequate forestry policy.

DRYDEN PAPER COMPANY PLANS TO DOUBLE PRODUCTION

The Dryden Paper Company, Ltd., of Dryden, Ont., is developing a further 1,200 electric h.p., and is extending its paper plant with a view to doubling the production of wrapping papers. The company is also installing a ground wood mill and will then produce machine finished and machine glazed krafts, manila and fibre papers, together with lightweight papers. The extension to the beater room will be a two-story brick and concrete structure, 120 feet long by 90 feet wide, while the new machine room will be 210 feet long by 80 feet wide and the new extension to the finishing room 140 feet long by 80 feet wide. The train shed for shipping will be 140 feet long by 40 feet wide. A new Yankee paper machine has been purchased which will trim 120 inches. It is hoped to have the extensions and new plant equipment ready by the first of the year.

PULP STOCKS INCREASED IN U. S.

Total stocks of all grades of pulp in the mills on June 30, says the Federal Trade Commission, amounted to 246,072 tons. Mill stocks of all grades excepting Easy Bleaching and Mitcherlich, increased during the month.

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their average daily production based on the reports covering the years 1917-1921, inclusive, the figures show that:

Groundwood pulp stocks equal 42 days' average output.

News grade sulphite mill stocks equal 9 days' average output.

Bleached sulphite mill stocks equal 7 days' average output.

Easy bleaching sulphite mill stocks equal 5 days' average output.

Mitscherlich sulphite mill stocks equal 8 day's average output.

Sulphate mill stocks equal 15 days' average output.

Soda pulp mill stocks equal 8 days' average output.

Total mill stocks of all grades equal 23 days' average output.

HELPING PREVENT FIRES

The Wisconsin Conservationist, published by the State Conservation Commission, tells of the co-operation toward forest protection being given by the Cornell Wood Products Company, one of the Wisconsin members of the American Paper and Pulp Association. As a result, six fire observation towers have been placed at key points in the northern Wisconsin forest region, and C. L. Harrington, state forester, writes in the Commission's magazine that the success of this co-operation has been such as to warrant an extension of the fire prevention system to the jack pine plains of the northwestern part of the state. Federal aid is now being received in this work, and additional lookouts will be furnished. The Cornell Wood Products Company will extend its co-operation into the new regions to be cared for by the fire lighting organization, as it, together with a big lumber company, has extensive holdings in that district.

The dried paper can afterwards be vulcanized (if desired) by any suitable process, such as the "Peachey" cold vulcanizing process. -A. P.. -C.

K-9 Loading Paper With Mineral Salts. F. REICHARD. German Patent 349, 882, March 16, 1921. In loading paper with such heavy materials as gypsum, barium sulphate, etc., only a small part of the substance is retained by the fibers by the methods in use up to the present time, due to the fact that these mineral salts settle quickly because of their weight. To counteract this effect waterglass solution is added to a suspension of the heavy filling materials, which are in as fine a state of subdivision as possible. When the silicic acid of the waterglass is precipitated, it holds these finely divided heavy salts in suspension. It was found that the addition of such materials as acids, salts, magnesium chloride liquor, improves this action considerably. -I. G.

K-10 Sulphate of Alumina for Paper Making. M. MUELLER. German Patent 352,289. The aluminous material is cooked with sulphuric acid, either under pressure or at atmospheric pressure. The acid or solution of bisulphate is used in excess. Coagulation of the mass is prevented by immediate dilution with water and neutralization of the free acid with alkalies. Magnesia is used for this purpose, as the sulphate is equally effective in paper sizing as the sulphate of alumina. Considerable savings in time, material, and heat are effected by this process. The residue from this treatment is available as filler for the paper, and as it is free from acid and sand it does not injure the beating tackle. -I.G.

K-10 Hard Sized Paper. HOLZVERKOHLUNGS INDUSTRIE A. G. German Patent 339, 594, March 28, 1916. The paper pulp is mixed with a small amount of alkaline solutions of the condensation products of hydroxyl naphtenic derivatives with formaldehyde or other aldehydes. A precipitating agent, for example an acid, is added. The resin that is used for sizing the paper may be produced by the solution of alpha-naphthol in a soda liquor, to which hot formaldehyde solution is added gradually. The reaction must be controlled. The condensation product of alpha or betanaphthol and formaldehyde can also be prepared by melting the naphthols and then adding the formaldehyde slowly. Paraldehyde can be used as well. The mass is heated until it thickens, at which point a further addition of formaldehyde results in the evolution of gas. The resin thus prepared is dissolved in the alkalies. The same resin can be obtained very easily by dissolving alphanaphthol in a little hot acetone to which first about 1 per cent. of sulphuric acid has been added and then the formaldehyde. The solution is then evaporated to obtain the resin. -I. G.

K-10 The Use of Waterglass in Sizing Paper. T. E. BLASWEILER. **Papierfabr.**, xix, 1217-1223, 1322-1327, 1505-1511, 1542-1546, (Oct. 28, Nov. 18, Dec. 23 and 30, 1921). (Compare **Papierfabr.**, xix, 625 ff., 1921.) Both in sizing pulp with waterglass and in working this material in conjunction with other sizing agents in coating paper, good results were obtained on the paper machine as far as the suction was concerned; there was no sticking at the presses and a smaller consumption of wet felt was noted. Rapid and complete sedimentation took place in the waste waters from the paper machine. The paper wos found to possess greater strength and a better feel. This paper can be sized properly with a greater use of filling materials. Paper sized with waterglass will take color well; it will not absorb too much of it and the color will appear bright on the surface of the paper. -I. G.

K-12 Regulating the Heating of Dryers. M. LANDRAUD. German Patent 348,856, Jan. 6, 1921. The valve on the steam pipes leading to the dryers is regulated automatically by the rotation of a roll which guides the paper to correspond with the degree of dryness required. -I. G.

K-12 Origin of the So-Called "Mildew" Injury to Paper Makers' Felt. J. MacINNES, F.C. Huyck & Sons. **Paper Trade J.**, lxxiv, No. 14, 41-42, (April 6, 1922). By the usual methods of bacteriological investigation the formation of "rust" or "acid" spots on felts was traced to the presence of one kind of bacteria, which is very closely related to **Bacillue mesentaricus,** and which has apparently not been described in the literature. The spores are very resistant to heat and drying. No satisfactory method of sterilizing wool has been developed so far, as any of the procedures which were effective in destroying the spores was injurious to the wool. Molding is prevented if the felts are kept in a dry place at a moderate temperature. Microphotographs of sound and infected fibers are shown. -I. G.

K-12 Width Indicator for Paper and Cardboard Machines. Patent applied for by CHARLES BECKER, July 12, 1921. **Papeterie,** xliii, 746-748, (Aug. 25, 1921). Wires are connected to the deckle strap carriages while the other ends are connected to some suitable indicating device, so that the distance between the deckle straps is read off directly. If desired, the graduations may be such as to give directly the width of the trimmed sheet. -A. P. -C.

K-12 The Drying of Paper. M. B. LITTLEFIELD, Fulton, N. Y. **Paper Trade J.**, lxxiv, No. 15, 239-247, (April 13, 1922); **Paper,** xxx, No. 7, 48-53, (April 1922). A discussion of the mechanism of drying and the performance of dryers with various systems of ventilation showing that a balance must be established between machine output and cost of drying on the one hand and quality of the finished product on the other. The object in paper drying, as in all other drying, is to design equipment so as to control the supply of heat and the removal of water vapor so that the maximum desired quantity and quality of product is obtained. The performance of the dryers should be controlled by determining the moisture of the sheet at different points and adjusting the battery to get the desired results. -A.P.-C.

K-19 Thin Coated Paper Containing Groundwood. P. EBBINGHAUS. **Wochbl. Papierfabr.**, lii, 4233, (Dec. 24, 1921). The difficulties encountered in the manufacture of such paper are discussed. They arise mostly in the grinding of the wood pulp, and they may can be avoided by the use of a special fine grinding machine. The paper making itself is difficult to carry out. -I. G.

K-21 Roofing Paper. Can. patent No. 188, 744, FLINTKOTE CO., Boston, Mass., assignee of F.C. OVERBURY, Hillsdale, N. J., both in the U. S. A., Feb. 18, 1919. -A. P. -C.

K-21 Felt for Buildings. Can. patent No. 190, 030, BARRETT CO., New York City, N. Y., assignee of R. P. PERRY, Upper Montclair, N. J., both in the U. S. A., April 29, 1919. -A. P. -C.

K-23 The Manuacture of Ivory and Alabaster Board. H. POSTL. **Wochbl. Papierfabr.**, lii, 3865-3868, (Nov. 26, 1921). A description of the manufacture of ivory and alabaster paper board, discussing raw materials, treatment in the beater and on the paper machine, and dscribing special apparatus such as presses, glueing machines, etc. The various adhesives employed in making these products are discussed; their properties are examined and their suitability for the purpose determined. -I. G.

K-23 A New Development in Manufacturing Waterproof Paper or Board. L. KIRSCHBRAUN,, The Flintkote Co. **Paper Trade J.**, lxxiv, No. 19, 48-50 (May 11, 1922). The asphalt waterproofing material is introduced simultaneously with the formation of the sheet. All sorts of waterproofed paper products, such as insulating papers, sheathing papers, boxboards, wall board, containers, paper bags, etc., can be made by this process. The fundamental principle of the process is based on rendering the asphalt non-sticky. This is accomplished by mulsifying it with the aid of highly colloidal clay. The clay-asphalt emulsion is broken down only by the removal of the water and the application of sufficient heat in the dryers to produce coalescence of the asphalt particles. The asphalt then becomes a continuous medium and its original properties are restored. The emulsion is pumped either into the beater or directly on to the paper machine. No special attachments are required. It was found that paper could be waterproofed in this manner much more effectively than by the methods commonly employed. An added feature of commercial importance is the increased strength which results from the introduction of the asphalt directly into the fiber of the paper. The drying of the paper is not retarded. (See also next abstract). -I. G.

K-23 Waterproof Paper and Process of Making Same. L. KIRSCHBRAUN. English Patent 174, 114, Sept. 7, 1920. (Compare preceding abstract.) The non-adhesive waterproofing emulsion described in U. S. Patent 1,302, 810 is made by a continuous process in which molden asphalt, or the like (e. g., pitch, tar, resins, etc.), at about 163 to 177 degrees, is introduced simultaneously with a thin stream of an aqueous suspension of colloidal mineral matter, e.g., clay, into a previously prepared quantity of the emulsion, contained in a mixer and kept in violent agitation by a rapidly revolving agitator fitted with helical blades, the temperature of the mass being maintained at about 66 degrees. The operation may be conducted under pressure when asphalt having a high melting point is used. The finished product, which should contain about 50 per cent. asphalt, 40 per cent. water and 10 per cent. clay, is withdrawn from the bottom of the mixer, diluted with water, passed through a fine strainer and pumped into storage tanks provided with agitators. This emulsion may be added in varying quantities, up to 193 per cent. of asphalt on the weight of dry fiber, to beaten pulp and the stock may be run on a Fourdrinier or cylinder machine. The sheets may be heat-dried, in which case the asphalt particles coalesee to form a continuous film throughout the sheet, or air-dried in which case the particles retain their individual character and help to strengthen the sheet. -A. P. -C.

K-23 Hard and Other Special Papers. Papierfabr., xx, 165-169, (Feb. 22, 1922). The methods of making these papers are described, including data on the amount of different raw materials used, details of the mechanical operation of the process, etc. Amongst the special papers mentioned are Jacquard paper, drawing paper, book printing paper, paper for making stamps, card paper, etc. -I. G.

K-23 Glueing Paper by Means of Various Adhesives EXPORTINGENIEURE FUR PAPIER UND ZELLSTOFFTECHNIK G. m. b. H. German Patent 351, 204, A band of paper is rolled up in the solution of the adhesive and allowed to remain for a suitable length of time. The paper from a number of rolls is then glued together to form one sheet. Generally the layers are all of the same sort of paper, but in special cases fabrics or wood veneers may be used. Various materials such as colored powders, bronze powder, sand, wood meal, talc, etc., may be sprinkled on the surface, tar, asphalt, cellulose solutions, adhesive lacquers, etc., may be used as adhesives. -I. G.

K-23 Flexible Waterproof Paper. L. HEILBRONNER. German Patent 303, 829; English Patent 143, 235. "Japan paper" is treated with a hot or cold solution of gelatine, agar-agar, potassium dichromate, glycerine or calcium chloride and ammonium carbonate; then it is dried and coated with a thin film of non-drying oil and train oil. This coating of oil prevents the washing out of the glycerine from the impregnated paper. The ammonium carbonate is added to reduce the inflammability of the paper. Several layers of the paper may be pressed together to form a single sheet for special purposes. This product serves as a substitute for leather or rubber in their application as membranes for gas meters and long distance gas igniting apparatus. -I. G.

K-0 Proportioning Chart for Paper Maker. N. G. NEAR. **Paper Trade J.**, lxxiv, No. 13, 50, (March 30, 1922). A proportioning chart is described which is useful for multiplying and dividing formulae used by paper makers. -I. G.

L. — Articles Produced from Pulp and Paper

L-6 Process for Molding Hollow Articles of Paper Pulp. Fr. patent No. 515, 589, P. E. WINNERTZ, Germany. Monit. Papeterie Francaise, lii, 361-362, (June 15, 1921). -A. P. -C.

L-7 Waterproofing Paper Yarn. H. T. BOEHME A. G. German Patent 346,061, Oct. 18, 1917. The paper yarn or fabric is passed successsively through a bath of montan wax or of crude montan wax emulsion and a precipitation bath containing a weak acid or an acid salt of an alkali metal of corresponding concentration. -I. G.

L-0 Gummed Cloth Sealing and Binding Tapes. C.H. CROWELL. **Paper**, xxx, No. 5 7-8, (April 5, 1922); **Paper Trade J.**, lxxiv, No. 14, 36, (April 6, 1922); **Paper Mill**, xlv, No. 14, 148, (April 15, 1922). It has long been desirable to have a proper and reliable test to accurately determine the quality of woven fabrics for binding purposes. It has been found that the well-known puncture test is of no value in determining the strength of cloth tape for binding purposes, owing to the fact that the testing apparatus must necessarily break the warp threads which in ordinary woven fabrics are much stronger than the woof threads. Tearing strength test, lengthwise of the material to be used, properly and adequately meets the requirements. This test is advocated for universal adoption. Recommendations are given. -I. G.

M. — General Equipment

M-4 Artificial Moistening of the Air in Paper Mills and the Influence of the Moist Air on Belts. Papierfabr., xx, (Jan. 22, 1922). Textile fiber belts and ropes behave in moist air just opposite to leather belts. Wire rope is unaffected, provided the wire is protected against rusting by a proper covering of cord. Moist air makes the collection of static electricity, which is always taking place due to the friction of the belt passing over the pulley, of little danger. I. G.

N. — Power Generating and Equipment

N-4 Value of Fuel Economizers in Paper Mill Operation. G. E. WILLIAMSON and G. C. DERBY. **Paper Trade J.**, lxxiv, No. 18, 52-55, (May 4, 1922). The advantages of fuel economizers are discussed in detail, and operating figures are given to show the economy effected by such an installation. The method of cleaning the apparatus, of caring for it, etc., is described in detail. -I. G.

TECHNICAL ASSOCIATION PAPERS, FIFTH SERIES

This volume of 176 pages is one of the most valuable contributions to the literature of pulp and paper manufacture yet issued. The contents include the following articles besides a directory of the officers and members of the Technical Association and the list of committees:

The Power Plant of the Paper Industry, by A. G. Darling and H. W. Rogers. A 100 ton per day newsprint mill is analyzed as to its requirements of steam used in process and for the production of power. Consideration is also given to recent developments in the application of hydro-electric power.

A System of Records to Maintain Uniformity of Basis Weights of Paper, by Parker K. Baird. A rational method by which the paper machine performances may be analyzed and recorded in regard to the uniformity in the weight of the paper.

Hydrating Machinery for the Paper Mill, by George L. Bidwell. The advantages obtained by the use of manganese steel for fly bars or beater rolls and for jordan fillings, based on the experience of a practical mill superintendent.

Modern Lighting for Paper and Pulp Mills, by J. H. Kurlandor. An illustratel treatise with tables covering in detail the principles of illumination and their application to the various departments of paper anl pulp mills.

Some factors Influencing Yield and Strength of Pulp Cooked by the Soda Process, by Martin L. Griffin. Deductions drawn by an expert in soda pulp from experience in textile finishing.

Sedimentation Control of Groundwood, by W. A. Munro. How freeness test results vary with change in the temperature of the stock.

The Efficient Production of Mechanical Pulp, by Adoloh F. Myer. Article descriptive of a practical speed governor for water wheels operating pulp grinders with illustrations showing the improvement in speed regulation by its use with the resultant economy of power.

The Drying of Paper, by M. B. Littlefield. The record of the study of different paper machines showing different rates of drying with interesting conclusions.

The Electric Steam Generator, by Horace Drever and Frank Hodson. An illustrated article covering the history, engineering principles, designs, economic fields, and comparative cost of operation of this new development in the application of electricity to steam generation.

Recovery and its Control, by George K. Spence. The outline of a steam of control with illustrative reports by an experienced operator of soda pulp mills.

Relative Efficiency of the Automatic Magazine Grinder as Compared with the Pocket Type Grinder, by John J. Case. A brief description of the construction of the two types of apparatus with a detailed analysis of the cost of operation of each.

Stamso — Cotton Linter Pulp, by Stewart E. Seaman. The production, characteristics and application of linter pulp.

Analysis of Reclaimed Cooking Acid for Sulphate Mills, by Gosta P. Genberg.

Analysis of the Raw Sulphite Acid, by Dr. Rudol Sieber. A discussion of the different methods of analysis with tables.

Concerning Lignin and Lignin Reactions.

Contribution to the Knowledge of the Constitution of Spruce Wood Lignin.

Contributions to a More Exact Knowledge of the Chemical Constitution of Spruce Wood. Three articles by Dr. Peter Klason, translated by W. E. B. Baker and Carl L. Fineman, by special permission of the author Valuable contributions to cellulose chemistry.

Use of the Continuous Centrifugal, by J. R. Kossler and G. N. Collins. A record of the experiments on washing soda pulp with the Elmore apparatus.

The Chemistry of the Sulphite Process, by R. N. Miller and W. H. Swanson. A record of the work being carried on in the Forest Products Laboratory, Madison, Wis., on sulphite.

Standard Methods of Testing Materials, by N. F. Becker. Covering Sulphate of Alumina, Lime or Causticizing, Crown Filler, and Soda Ash.

Color Effect of Rosin Size Emulsion on Finished Product, by C. H. Kent.

Sulphur in Sulphite Waste Liquor, by George Barsky. A contribution to research chemistry.

Producing Bleach Liquor with Liquid Chlorine, by S. W. Jacobs and H. P. Wells. An illustrated article describing a plant installation with records of its performance as compared with the use of bleaching powder.

Fuel Economizers in Paper Mill Operations, by George E. Williamson and G. C. Derry. A detailed analysis of the principles of operation and care of the apparatus.

A New Idea in Chip Breaking, by A. D. Wood. Description of apparatus developed by a practical mill superintendent.

Bibliography of Paper Making for 1921, by Clarence J. West. A classified index of the literature published during 1921.

Proceedings of the Annual Meeting, April, 1922.

Sectional Meeting on Dyestuffs. Discussion on the use of Auramine, Copper Sulphate, and Stilbene Yellow; two sidedness of paper and foam and its prevention.

Sectional Meeting on Paper Testing. Valuable discussion on the Microscopic Analysis of Paper; the Effect of Relative Humidity on Paper Tests; Tearing Tests, Sizing Quality of Paper; and recommendations of the Committee on Paper Testing.

Sectional Meeting on the Drying of Paper. Discussion on the following subjects; The Efficiency of Drying; and the factors to be considered; The Method of Attack; The Value of Graduated Temperature in Drying Paper; Pounds of Paper Dried per Square Foot of Drying Surface per Hour, the Measurement of Heat Units Used Per Pound of Water Evaporated.

Discussion of Various Papers Presented at the Convention. The volume described is obtainable, on order from the Technical Association of the Pulp and Paper Industry, 18 East, 41st St., New York City, or from The Pulp and Paper Magazine, Gardenvale, Que.

THUNDER BAY PAPER CO. GET CHARTER

The Thunder Bay Paper Company, Limited, has been granted an Ontario charter, with headquarters at Port Arthur and a capital stock of $100,000. The company is authorized to deal in and manufacture ground wood, sulphite, sulphate and paper products of all kinds. Among the incorporators are George Wilson Mead and George Phelps Berkey, of Wisconsin Rapids, Wis.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, August 15. — Locally business is quiet, and the trade reporter, ever on the look-out for something new, finds it increasingly difficult to put a different angle on market conditions. Occasionally a jobbing house reports a little activity, and now and again one may come across a large order, but the majority of firms declare that there is little doing. The reason? Just the usual summer dullness. But what as to the immediate future? Well, there are great expectations; in fact, according to some representatives there will be a rush of business of such a character that the mills will be flooded with orders. This is, no doubt, putting it too strongly; at the same time, there is good ground for the hope that we shall witness a substantial increase in the paper trade.

The newsprint market remains firm. The publishers are keeping up their large requirements, with the outlook favourable for the continuance of this condition. In another column we refer to the renewed speculation in paper stocks and to its dangerous character, having regard to the price situation. The fact that the International Company has advanced its price to $80 per ton for new business is no guarantee that the Canadian Companies will put up their price at the expiration of the present contracts, and all the gossip on the Street will not affect the position. The decision is in the hands of the paper Companies—not in those of stock-brokers, speculators or financial writers. The price will be based on conditions which obtain at the time when the price has to be fixed, and these may be materially different from those now existing. In the meantime the mills are producing at a very satisfactory rate.

Other sections of the trade are moderately busy—we refer particularly to the orders for the mills. Fine and book papers are in steady request; while the board department is still active.

In pulp the demand for bleached sulphite continues very good; the orders are coming in at a rate which promises to keep the mills busy for some time. Groundwood too is picking up, and in addition to more sales, the price has strengthened somewhat. This is a good sign, as groundwood has been the weak spot—in fact some of the companies refused to make any surplus on account of the unremunerative price it commanded.

Toronto Topics

Things have slowed down in the course of the last ten days to quite an appreciable extent. In some cases this has been to a more marked extent than at corresponding periods in 1921. Such cases are in the minority, however. In most cases the present condition is quiet in comparison with July, but good for vocation time.

Machinery supply firms are not very active but they report good collections. This coupled with the general manufacturing activity is a fairly healthy sympton indicating continued activity.

Reports covering the group of Central Ontario cities including Toronto, Hamilton, Brantford, Kitchener, London and Peterboro, refer to improved conditions in steel and industries related to building and good general trade conditions in the smaller cities, with anticipation of business from 5 to 15 per cent. over last year in the course of the next three months.

In connection with the small volume of orders in several lines it is interesting to hear of many cases of comparatively large hold overs of stocks such as staple dry and fancy goods, bags and wrapping paper. The relatively large amounts of some of these in small businesses has affected trading more possibly than has been credited and at the same time made a considerable indirect addition to everhead sales expense.

The strength of the situation is of course the anticipation of good crop returns, growing nearer every day with the harvesting of hay and cereals and some of the fruit.

Market Notes

Groundwood — $30 to $40 delivered.
Sulphite — News grade $60, Book grade $65 delivered.
Bleached Sulphite — demand is improving and prices tend to stiffen in some cases. $85 to $90 delivered.
Sulphate — $70 delivered.
Book and Writing — Mills and handling trade are quiet.
Coated Book — Mills report increased activity and jobbers note better demand.
Cover papers — Show slightly improved demand.
Prices unchanged out inclined to strengthen.
Wrapping and Bag — lines reflect dullness in retail trade.
No. 1 Kraft M. F. $8.00 M. G. $8.15.
Colored Sulphite $8.00.
Colored Kraft 9¾c to 10¾c.
B. Manila $5.50.
No. 1 Manila $7.25.
Fibre Manila $7.25.
Bags — Light Manila 62½ p.c. — 7½ — 5 p.c. off 100 M Lots.
Heavy Manila 60 p.c. off 100 M Lots.
Light Kraft 60 p.c. — 7½ p.c. off 100 M Lots.
Heavy Kraft 50 p.c. — 10 p.c. off 100 M Lots.
White Bond 17½ p.c. — 10 p.c. off 100 M Lots.
Tissues — No. 1 Manila, 20 x 30, .80; 24 x 36, 1.05.
Cap Tissue 10 lbs, 20 x 30, .90; 24 x 36 1.25.
No. 1 White, 20 x 30, 1.10; 24 x 36, 1.55.
Towels — Car lots
Interfolding per case $5.63 Net.
Bleached White — Rolls of 150 towels $22.00 less 22 p.c.
Natural White 50 rolls to case. $19.00 less 22 p.c.
No. 3 Towels 50 rolls to case $13.75 less 22 p.c.
Toilets — Car Lots — List price less 20 p.c. and 25 p.c.
Paper Stock — Demand for paper stock is good.
No. 1 Hard White Shavings $3.75.
No. 1 Soft White Shavings $3.40.
Heavy Books and Magazines $1.70.
Ledgers & Writings $1.95.
No. 1 Kraft $2.25.
Newspapers $ .80.
No. 1 Miscellaneous 65c — No. 2 Miscellaneous .60.
No. 1 Mixed Papers .60 to .70.
Cotton Rags No. White .04½.
Third & Blues (repacked) .02½.
Roofing Rags $23.00.
New Cotton Cuttings — Market continues strong especially for No. 1 White Shirt cuttings, quoted at .11 — .11¼.
Fancy Shirt Cuttings .05½.
Canton Flannels Bleached .09.

White Lawns .08.
Blue Overall Cuttings. .05½.
Ropes and Bagging No. 1 Scrap Bagging $17.50.
No. 1 Manila Rope — This stock is still in good demand.
Mixed Strings $20.00.

NEW YORK MARKETS

New York, August 12 — (Special Correspondence) — The International Paper Company has again advanced its price of newsprint paper $5 a ton, bringing the market up to $80 a ton f.o.b. mills for standard news in carload lots or more. The announcement was made yesterday from the New York office of the company, and the increased price will apply to all transient and new business after September 1.

This is the second rise in newsprint within a period of about six weeks, an advance of $5 a ton becoming effective on July 1. News of the rise came somewhat as a surprise to the trade although many were expecting the increase by the largest newsprint manufacturing organization on the American Continent. Similar to the first advance, however, the increase announced yesterday came somewhat earlier than the trade anticipated. A consensus of opinion among paper men here was than the second rise, which had been hinted at by officials of the I. P., including President Dodge, would be promulgated during the final quarter of the year, so that the announcement of the advance unquestionably surprised the trade.

This second rise in newsprint prices is nothing more than a reflection of the strong market position of print paper. As previously pointed out in this correspondence, the consumption of newsprint is mounting at a steady rate in the United States, and demand for paper has reached the point where manufacturers are having some difficulty in filling the requirements of publishers. Not that the mills of the country and of Canada are not sufficiently equipped to turn out an ample supply of paper, based on the current consumption, but it should be remembered that some producing companies have not been operating certain of their mills, while in other plants some machines which ordinarily run on newsprint have in recent months been making other kinds of paper. Manufacturers, from all indications, have been increasing their output only as the demand warranted, and it would therefore appear as if demand is running ahead of the production for the time being, thus creating a very firm market situation.

Whether or not print paper prices will go higher is a question in the minds of most members of the trade at the moment. Some express the belief that they will, and base their opinion on the acknowledged growth in consumption, expectations of an even greater consumption later in the year, and the independent attitude which newsprint manufacturers are exhibiting at present. Most print paper producers in the States have practically their entire output for the balance of the year under contract, and they can consequently afford to be independent, and the others, such as the International Paper Company, who, if the need arises, can increase their production to take care of the extra demand, are moving prices upward on their additional tonnage, and seem to be experiencing little trouble in securing the higher prices quoted.

The advance in newsprint is easily the outstanding development of the week in the paper market. Otherwise, there has been little change of importance. Business is going along at a good and healthy pace, with demand for a majority of papers of better volume than it usually is at this time of the year. The railroad strike and the shortage of coal are unquestionably hampering manufacturers to quite an extent. Many mills are without the coal needed and are compelled to operate on curtailed schedules. The railroad situation not only is holding back the movement of coal from mining points to consuming plants, but is also making for much delay in deliveries of paper by producers to jobbers and consumers. This naturally is creative of increased firmness in the jobbing trade, and jobbers in frequent cases are securing premiums for some kinds of paper which they happen to have in stock and can therefore deliver promptly.

Prices on paper of all descriptions rule steady to firm. Book papers are showing more life, with publishers constantly broadening the scope of their buying operations, and there is a satisfactory demand for fine papers, especially the medium and low priced grades of bonds and ledgers. Coarse papers are temporarily quiet in comparison with other grades, but this is largely due to the season and therefore causes no apprehension in the trade.

Demand for box boards is active; in fact, it could reasonably be described as brisk. Paper box makers are buying freely and appear to be concerned over their board supply owing to the withdrawal of all quotations by many mills due to coal scarcity. Jobbers carrying board in stock in New York are realizing attractive prices, sales of plain chip board at $47.50 a ton and higher having been recorded, and of news board at $50. Such mill quotations as are available range around $45 a ton on plain chip and $47.50 on news board f.o.b. New York.

GROUND WOOD. — There is a steady tone to prices on mechanical pulp, and reports to the effect that quotations on ground wood in Canada have stiffened have tended to increase the firmness of the market here. Grinders in the States seem to be having no difficulty selling the great bulk of spruce pulp offered at about $30, or a dollar or two per ton higher, f.o.b. producing mills, which means consumers are paying close to $40 on an average delivered for ground wood for prompt shipment. With the newsprint industry as active as it is, members of the pulp trade profess to foresee higher prices for ground wood, and talk quite bullishly regarding the outlook.

CHEMICAL PULP. — The market for chemical wood pulp is firm. There is a steady demand from consuming sources which probably exceeds the tonnage in which paper makers ordinarily buy in midsummer, and quotations evince a decidedly upward tendency. No changes of note have actually developed and conservative opinion is that there will hardly be any momentous changes in pulp values during August, but a majority confidently look for higher market levels next month. Importers say that matters are shaping up in primary pulp markets where they are compelled to meet higher prices named by producers in Scandinavian and other European countries, and that, moreover, less pulp is being offered from these sources than has been the case in recent months, thus indicating that foreign producers are regaining some of their old markets which for quite a time absorbed little pulp.

RAGS. — The papermaking rag market displays a firmness of tone which is somewhat exceptional for this period of the year. The principal reason for this firmness is that roofing rags are moving in a very consistent manner and in comparatively large amounts. With roofing paper mills buying rags freely, packers and dealers are readily disposing of their bulky grades and consequently are enabled to hold the better qualities at higher prices.

About 1.30 cents a pound f.o.b. New York is still the market value of No. 1 roofing stock, with No. 2 packing selling at around 1.15c. at dealers' shipping points. In the West higher prices are reported prevailing, it being said that dealers in that part of the country are securing 1.50 cents a pound for No. 1 roofing rags. New cuttings are firm and tending upward. Most dealers in New York now want close to 11 cents per pound for No. 1 white shirt cuttings, and new light silesias are quoted to mills at 6.75 cents a pound f.o.b. this city, fancy shirt cuttings of bleachable quality at 6 cents, unbleached muslins at 10 cents, white lawns at 9.75 cents and washables of No. 1 grade at 4 cents.

PAPER STOCK. — Nearly all kinds of old paper are firm in price and are moving toward mills in good amounts. Low grades are probably in relatively better call than high qualities, and sales of No. 1 mixed paper are reported at 75 cents a hundred pounds f.o.b., New York, and of folded newspapers at 80 cents. Even these figures are said to have been exceeded in some cases. Old magazines are in steady demand and strong in price, and New York dealers are said to be refusing orders for No. 1 heavy books and magazines at prices which figure out less than 1.95 cents a pound f.o.b. this city, while mixed books are held to be worth around 1.65 cents. Shavings show little change but prices are marked by steadiness, with No. 1 soft white shavings quoted at 3.50 cents a pound at dealers' shipping points, and No. 1 hard white shavings at from 3.75 cents upward, depending on the packing. Ledger stock is firm at 2 to 2.15 cents a pound, and old kraft paper at 1.95 to 2 cents for No. 1 packing.

OLD ROPE AND BAGGING. — Prices on old rope continue rather easy, and paper mills are reported paying only about 5.75 cents a pound at shipping points for No. 1 manila rope of domestic origin, with some buying talked of at below this price basis. Mixed strings are selling at 85 to 90 cents a hundred pounds New York, and sisal strings at about 1.25 cents. Old bagging is quiet though shipments to roofing paper mills are of fair size. No. 1 scrap is quoted at an average of 1.10 cents per pound at shipping points and roofing bagging at around 90 cents a hundred pounds.

U. S. PAPER TARIFF

Commenting on the United States pulp and paper tariff policy, the Boston News Bureau airs the following interesting view:

"The failure to protect newsprint, however, is going to mean the passing of the industry in the United States. In Canada, one need not buy woodlands in fee, the timber rights alone may be purchased cheaply from the Government. One need not buy his waterpowers, because the provincial government will grant a 99-year lease for the annual charge of 10 cents per horsepower, or thereabouts. Taxes and wages are less costly to enterprising capital. And, finally, there is no Sherman law to prevent co-operating for efficiency.

"This last point is one which will first penetrate the opening left by removing the newsprint duty. The moment Canadian production of newsprint becomes large enough to supply 50 per cent. of the needs of the United States, it will first drive American production out of the field by cutting prices and then make the price 'jump over the moon,'' as one man put it.

"Duty-free newsprint means the passing of the United States industry to Canada, to take advantage of better conditions. International Paper, for instance, has just completed the most modern mill in the world at Three Rivers, Canada, its capacity of 240 tons a day is about 20 per cent. of International Paper's total."

Because your fellow-man doesn't agree with you is no sign you are all wrong.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

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WOOD PULP

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Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

With the Woodsmen

REPORT OF ONTARIO LANDS AND FORESTS

The report of the Hon. Beniah Bowman, Minister of Lands and Forests of the Province of Ontario, has been received. It covers the year ending Ooctober 31st, 1921, and the Minister states that the year under review "may well be regarded as the most successful in the history of the Province so far as the Department of Lands and Forests is concerned, from the viewpoint of movements in land transactions (when the War conditions and reconsturction period subsequent thereto are considered) and in timber operations and of revenue results."

The revenue from sale and lease of lands and water power rentals was the largest in twenty years amounting to over $215,000.

The total revenue from all sources was $4,035,747, more than a million over the previous year.

Woods and forests brought in a revenue of $3,763,440, as follows:—

Bonus	$1,555,770.69
Timber Dues	1,921,356.95
Ground Rent	99,245.12
Transfer Fees	5,810.00
Fire Protection	181,257.72
	$3,763,440.48

The total disbursement, less certain sums for civil government was $2,029,453, of which Fire ranging was $547,474, Forest ranging and Measurement $339,428, Reforestation $83,372, Clearing fire hazards and Kapuskasing lands $14,786, making a total for protection and forestation of nearly a million dollars. The report has this to say with reference to pulpwood and concessions:—

"*Pulpwood*—The upward trend of pulpwood induced by the constant and sustained market during the war, continued throughout 1919, and resulted in unprecedented operations in the bush, there being no less than 928,185 cords, cut from Crown lands during the fiscal year ending the 31st October, 1921, or 621,489 cords in excess of that taken the previous year.

"A decided lull in the pulpwood business, however, set in before the large stock could be marketed, and the industry has been most adversely affected; the outlook at present for an early return to conditions approaching those of a few years ago are not the brightest.

The general declining market for Ontario pulp in the United States has been accentuated by the European importations, particularly from Germany and Scandinavian countries, the rate of exchange working to the serious disadvantage of American producers in Ontario. The restrictions thus imposed upon our pulp and paper are for the time keenly felt. The Kapuskasing limit is not being worked this year owing to the market conditions, and while during the season of 1920 the English River Concession was sold, and Nipigon, Nagagami and Long Lake were disposed of during the past year, there is apparently no prospect of an immediate development. Efforts, I understand, are being made towards bringing about legislation in the United States for a correction in the tariff laws to stabilize exchange and any measure leading to this end would benefit the producers and proportionately enhance the demand. With a gradual consumption of the somewhat abnormal stocks of pulp and paper now held will come, it is hoped, a further call for the raw material and then there will be a resumption of the industry and trade.

Pulpwood agreements, covering important areas, to the number of four, were entered into, as follows:—

English River, District of Kenora, 3,046 square miles.

Nagagami Pulp and Timber Limit, District of Algoma, 2,300 square miles.

Long Lake Limit, District of Thunder Bay, 3,400 square miles.

Nipigon Pulp and Pine Limit, District of Thunder Bay, 1,240 square miles.

In appendices appear in extenso the agreements as to these limits and the agreement with E. W. Backus et al., reviewing the 1914 agreement, leasing the White Dog Rapids on the Winnipeg River, and containing clauses as to sale of limits and conditions as to erection of mills and manufacture.

Referring to Aerial Forest Survey, Appendix 48, Report of Forestry Branch, carried on from Sioux Lookout, the report says:—

"Flying and forest conditions having thus been found suitable, and as the separation of timber types and non-commercial areas was all the information required over a large area, typing on this basis was commenced about June 4th, and carried on during the remainder of June and July. Weather conditions were ideal for flying, so that by August 2nd, the mapping of some fifty thousand square miles was completed to show the following types:—

(1) Coniferous stands, 75 per cent. of better coniferous species;

(2) Mixed stands, less than 75 per cent hardwood;

(3) Burned-over areas partially restocking."

Further, having completed by August 2nd, work which was expected to take the whole season, additional work was undertaken to show age and size of the three types given above. The season's work resulted in mapping approximately 10,000 square miles to show the three composition types and four size classes.

(1) Mature stands (75 per cent at least commercial.)

(2) Pole stands (not over 25 per cent commercial sizes.)

(3) Sapling growth (no commercial sizes.)

(4) Reproduction (not over 3 feet high.)

Results were checked by landings and the report says: "Results in this connection were extremely gratifying, and in twenty-one landings, a total for the season, including thirteen where sample plots were taken, no single case occurred in which the aerial classification differed materially from conditions as actually found on the ground."

Evidently aerial surveying is proving a very useful factor in forest work.

The report also includes details of the Algonquin, Georgian Bay and Trent forest surveys, showing proportion of cleared land and forest and the composition of the stands.

The whole report covers 292 pages.

SAYS WOOD BY WEIGHT WON'T WORK

Montreal, August 3rd, 1922.

Editor, *Pulp and Paper Magazine*.

In reading your article on "Wood-cord vs Weight" by B. T. McBain I differ with him as to ideas about wood being sold by weight instead of by the cord. By measurement is most decidedly the better and more honest way. In our youthful days in this old Province, yes, and the neighboring one, when we burnt wood instead of coal, the purchaser saw to it that that the wood was laid *evenly* and *solid*, "no *holes* in the pile". There are some things left of the "good old times" and that is one of them. We old Canadians of this Banner Province know the reason of things, especially as to Forests and Wood.

I am selling pulpwood and know that the weight proposition wouldn't work.

Yours truly,

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There are many exhibits which will show you how you can improve the quality of your products without increasing their cost, making them more valuable to the consumer.

The exhibitors in this Exposition can show you every phase of industrial work from the raw materials secured from nature through the processes, the machinery and equipment used in their manufacture, the finished products to the containers and final shipment of the products. They will also demonstrate how to protect against the hazards and risks attending the operations in your mine, plant, or factory.

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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XX. GARDENVALE, P. Q., August 24, 1922 No. 34

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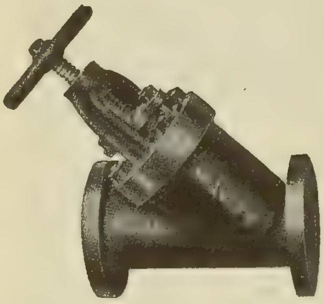

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EDITORIAL

LET'S HAVE A BONFIRE!

Come on, let's burn it all up! There's wood enough for a dandy fire. All over the Dominion there are acres of slash, left by careless, thoughtless lumbering. There are also large areas where the bud-worm and windfall killed trees lie on the ground, making a tangle of debris that will prevent the fire fighter from making headway. All we have to do is to build too big a campfire and leave it burning; or we can throw down a burning match; or throw a cigar stub or cigarette butt from the railway train, or motor; or burn brush on a clearing, close to the timber; or use locomotives or saw mill engines without good spark arrestors. It's a cinch to start a forest fire, and gee! what a fine blaze it makes.

Of course it will probably burn some nice big trees too, but what do we care? We don't have to hunt and fish in the woods; we can go to the ocean, or on the big rivers. In fact if we get rid of the woods, the fur animals will have to go somewhere else. Some calamity howlers say that civilization is built of wood and that Canadian industry is largely dependent on the forest. That's all poppycock. We don't need wood for houses, this is the age of steel and concrete—and let the baby wear a head-guard so he won't crack his skull on the cement floor. We shall not need axe handles as there will not be any wood to cut. And no more splinters—won't that be fine! We can slide down the aluminum ladder without danger to our breeches.

When we go fishing on the ocean we can sail a steel or concrete boat—they sink better than wooden ones. The fisherman need not bother about barrels, tubs or boxes to ship his fish in. He can eat what he wants and use the rest to fertilize his garden.

And then come the books and papers. Why should we have them? They just occupy time that might be employed in sleeping or other useful work. Newspapers use up lots of wood, so the best way to kill them off is to burn the trees; or ship them out of this country—anything to get rid of them. We are doing pretty well at it, however. In one Province we burned over a million acres last year, and nearly as much already this year. Other provinces are doing as much or better. At this rate it will not take long to get rid of the ugly green things the poets talk about and the artists make pictures of. The idea of letting the trees keep the water from running back to the sea, and taking the warm brown earth along with it! Isn't it lots nicer to see a tumbling torrent in spring and the nice smooth rocks on the bottom in summer? Even if the cattle do go thirsty, we have enough milk canned; or the fields dry up and crops fail, we can buy less (we'll have to); or the factories shut down for lack of power, we can rest; or the stock of lumber for houses fail, we can find a cave some place.

And the Lord seems with us in our destruction of the forest. He sends the spruce budworm, the larch saw fly, the borers, fungi, lightning, and wind. Don't give it up! We can have Canada as bare as a billiard ball in another generation if we only keep on burning and exporting our trees. There will not be so many jobs—nor so many to do our work and buy our goods. Consequently, with less work there will be more rest. Oh, happy thought. What if we don't get enough to eat, there is still plenty of fresh air and water and earth. The elements present therein are only rearranged to make human bodies. Perhaps some genius will perfect a new mutatory apparatus in place of our antiquated alimentary and respiratory systems.

So down with the trees!

SIZES OF PAPER

One of the most puzzling phases of the paper trade is the ridiculously and unnecessarily large number of sizes of paper with special names. Not only are they too many, but they are ambiguous, indefinite and misleading. Different branches of the trade have chosen the same name for different sizes or different names for the same size. It has got so bad that it is necessary to explain the name we use by the size we want. Then why use the name at all?

Fortunately there is a strong tendency in this direction, but it will take time to convert the world. It is an international matter but Great Britain is agitating for one type (or more) of numerical system, while we successors of the Indians are discussing the good points of several others. If England adopted one such system, the United States a second and the Canada a third, with Scandinavian and other continental countries going their way with metric units we shall soon be talking numbers in about five different languages.

Why not have a joint international committee to straighten the matter out, say, on the pound and inch basis and the gram and centimeter basis, with standard conversion factors. The first step will be to make 1,000 sheets the standard package, instead of the several different reams in use now.

Incidentally, we trust our readers will study the list of *sizes of paper* on another page and send in corrections to the Editor as soon as possible.

A GREAT INVESTMENT OFFER

Last week we referred to the statement issued by the Minister of Finance relative to the Government loan operations, and, in commenting editorially thereon, we expressed unqualified approval of the conversion scheme announced therein. Elsewhere in this issue will be found the official advertisement of the scheme in question, and, from a perusal of this, it must be apparent to all that the holders of the Canadian Government war loan bonds, about to mature on the 1st of December next, have a splendid opportunity for reinvestment open to them.

For the ordinary investor, the first thing to be sought in an investment is that it should be absolutely safe. The only people who, without an uneasy mind, can afford to go in for speculation and take the risks attendant on speculative enterprises, are the really rich, and the really rich are relatively few in number. The rest of us—the great majority—whose means are moderate, must, if we are wise, make it a *sine qua non* of our investments that they be absolutely secure. And it would be difficult, anywhere in the world today, to find more absolute security than that offered by the bonds of the Dominion of Canada.

Further, in addition to the absolute security they offer, the bonds which the holders of those about to mature can exchange for the latter carry the same high rate of interest, namely 5½ per cent., and are either for five years, maturing in 1927, or for ten years, maturing in 1932, as the bondholder may prefer. Without hesitation, we say that we know of no other investment, taking so high a rank, that combines, to the same extent, unimpeachable security with liberal interest. Moreover, as we pointed out last week, a further substantial advantage to the bondholder who takes advantage of this conversion scheme is that he will receive a bonus of one month's interest.

The present offer is not made to investors generally, but only to the holders of the bonds about to mature. Holders who do not wish to reinvest in the manner open to them through the conversion scheme will be paid in cash on the 1st of December. But the security offered to them is so gilt edged and the rate of interest so generous that we shall be very greatly surprised if the great bulk of the maturing loan is not eagerly renewed by those who have the chance offered to them.

COBWEBS

A reader of the *Pulp and Paper Magazine* wants to know how to estimate the cordage of floating pulpwood. Where is the Solon who can do it?

There is considerable satisfaction in reading the recommendations of Dr. Ruttan to the Society of Chemical Industry, with regard to the Society's meetings. The suggestion is made that the program include an open discussion or debate on some subject of common interest, introduced by several prominent speakers and joined in by the assembly. This has been tried by the Technical Section of the Pulp and Paper Association with marked success.

The Canadian paper industry has lost a fine, though quiet figure in the death of Mr. Joseph Ford of Portneuf, P. Q.

BRITISH FORESTER COMING

In view of the extensive reforestation program now being carried out in Great Britain, the visit to Canada of Mr. R. G. Broadwood, M.C., B.Sc., lecturer on forestry in Edinburgh University, is very timely. Mr. Broadwood, is, heartily welcome to this country, where he will be given, we are sure, every facility to study Canadian Forestry methods. The Federal and Provincial Governments, especially that of the province of Quebec, are spending considerable sums in this direction, while some of the pulp and paper companies, notably Laurentide, are leaders in the work of reforestation.

Mr. Broadwood is here at his own expense to get first hand information as to what we are doing, with a view of conducting a party of forestry students from his University to Canada early next year. According to an interview, he is of opinion that students in their last year would find more advantages to visit Canada than to go to France, Germany, Switzerland, and India, which had been the practice heretofore. While Canada has made great strides in forestry, we are afraid that Mr. Broadwood is a little outside the mark when he states that: "Canada easily tops the world in this line of work, particularly in its engineering side." Our foresters are doing magnificent work, and would be even better if they received more widespread support, but we must not shut our eyes to the fact that in some respects we are behind Scandinavian countries. This is notably so with regard to forest fire protection, some logging methods, and forestry training, and above all, in that enlightened public opinion which counts for so much in preserving forest wealth. Those who doubt this should read the reports of Mr. Edward Beck, manager of the Canadian Pulp and Paper Association, and Mr. G. Piché, chief forester of the Province of Quebec. Both are keen observers, and their reports on their visits to Scandinavia make it clear that we can copy with advantage some of the practices of the Scandinavian countries.

At the same time students from the old country will derive great benefit from visiting the Government nurseries and the limits of forestry departments of the principal Canadian pulp and paper companies. It is mainly to these that we must look for the adoption of an enlarged and progressive policy in the direction of saving our forests from being "used as mines", to adopt the expression of Mr. Ellwood Wilson. The use of forest resources without a thought for the future involves the ultimate reduction, if not the entire destruction of those industries which depend upon an abundant supply of pulpwood and lumber.

A Canadian Source of China Clay

By W. M. GOODWIN
Editor Canadian Mining Journal

Until recent years there has been in Canada no economic production of China clay, and deposits of the proper quality and in sufficient quantity within reach of adequate transportation facilities have been disclosed only during the last decade. These deposits are in the vicinity of Huberdeau, Que., 85 miles north-west from Montreal by railway, or 70 miles in a straight line. The property at present being developed is at the terminus of a branch line of the Canadian National Railway extending from Montfort Junction on the main line to Quebec, and is worked by the Canadian China Clay Company.

The locality in which the Kaolin occurs was examined in 1916 and again in 1918 by Dr. M. E. Wilson of the Geological Survey, whose report (Memoir 113—*Geology and Mineral Deposits of a Part of Amherst Township, Quebec)* describes fully the geology of the deposits and discusses their origin.

Historical

Kaolin, or China clay, was first reported in the district in 1895, when a sample was obtained from the bottom of a well. As there are few natural outcrops of rock in the vicinity, all being covered by a thick layer of glacial drift, prospecting is expensive and development has thus been retarded.

Ten years ago the Canadian China Clay Company acquired a large acreage of the Kaolin-bearing ground and erected a washing plant. Several thousand tons of China clay was produced under the original management. The management was changed and the plant altered, with less satisfactory results. Eighteen months ago a third management was inaugurated and the operations since then have been consistent and effective and promise to be not only commercially successful, but to lay a solid foundation for a Canadian China clay industry.

Geology

The deposits of China clay occur in a quartzite rock of the Grenville series—the oldest series of rocks known to have a sedimentary origin and consequently one of the earliest to be found on the crust of the earth. This quartzite was originally sandstone, and with it were associated beds of shale, which are now changed to garnet gneiss. This garnet gneiss occurs in an irregular way throughout the quartzite, and as it is iron-bearing, it introduces material that contaminates the quartzite and clay with rust. But there are zones that are free from the influence of this garnet gneiss, and consequently free from iron. The dip of the quartzite is vertical or nearly so.

The zone in which the kaolin occurs is about 1,000 feet wide, and is known to extend, north and south, for a distance of 7,000 feet. How far the zone extends beyond the limit, is not known. Comparatively little surface prospecting has been done to disclose what lies beneath the mantle of boulder clay that effectually covers the ground. The clay-bearing zone is enclosed by a mass of intrusive granite, younger than the Grenville series, which provides a suggestion as to the origin of the kaolin deposits.

Character of the Deposits

As the China clay occurs in veins and pockets in the quartzite rock, and since in some zones it actually replaces the particles of rock, it is obvious that it must have been brought into its present position from without. The quartzite has been much folded, faulted and shattered, thus providing the interstices in which the clay has lodged. There is, thus far, no evidence to show conclusively whether the clay was concentrated in its present position from rocks that at one time covered the present surface, whence it was leached by surface agencies, or whether it was brought up from below by means of ascending hot solutions. The proximity of the large masses of intrusive granite tends to support the latter theory; and it so, the chances for the extension of the clay deposits to great depths are favourable. A deposit due to the action of superficial agencies would be limited in depth.

Origin of the Deposits

The China clay in this deposit is associated with much-shattered vertical beds of quartzite rock. In places there are veinlets and veins of pure white clay, up to a foot or more in width; but the bulk of the clay occurs in admixture with particles of quartz, or filliing little cavities in the quartzite. As commercial sources of clay, the veins are too small to work alone, and the quartzite rock, which contains on an average 11 per cent. of clay, is too lean, though there is a tremendous quantity of it available. Hence the commercial possibilities at present are confined to areas within the 1,000 foot zone of quartzite rock where the proportion of clay is higher than the average.

The Mill Buildings

By no means all the clay present in this zone can be classed as China. The larger part of what has been exposed up to the present is stained with iron and must be classed as fire clay. Fortunately this fire clay has proved to be an excellent material for saggars,—a requirement rather hard to fill. When washed, it provides a buff-coloured clay, suitable for certain purposes.

A map now available, shows the lenses of China clay and of fire clay disclosed in the small part of the zone examined up to the present. The two lenses of China clay, only one of which has as yet been delineated with any precision, are enclosed within fire clay, all of which carries about 40 per cent. clay, the remainder being quartz. This zone of clay, from 100 to 200 feet in width, is enclosed within pure, white quartzite carrying about 11 per cent. of clay, as mentioned.

Size of the Deposits

Formerly the clay was won entirely from open cuts and pits. Now, mining methods have been resorted to, and have proved completely satisfactory. One lense of

China clay has been developed so far by this means, as shown on the plan. The shaft is 100 feet deep, and the drifts have disclosed a lense 200 feet by 60 feet. The lense to the south has been developed only by an open cut, and consequently is not so well defined. In the one lense there is now developed, between the surface and the first level, 25,000 tons of China, exclusive of the quartz with which it is mixed. The production from this lense to date has been 7,000 tons.

Of fire clay, 300,000 tons have been developed. A large quantity is still available by open cut methods. 10,000 tons of fire clay has been shipped to date.

For making saggars, the natural mixture of clay and quartz is used. Of this material there is available, above the 100 foot level, over a million tons.

What more extensive exploration will disclose it is impossible to predict. But the proved value of the small portion of the zone already examined suggests that here may lie sufficient clay of various qualities to provide not only for the needs of Eastern Canada, but for a substantial export trade.

Plant

The process of preparing the crude China clay for market is simple, as is the plant required. After being loosened with dynamite, the crude clay is trammed to the shaft and hoisted to the surface. Subsequent operations are illustrated in the accompanying flow-sheet.

The whole process of ore-dressing in this case consists in separating the clay from the grains of quartz and from stray chips. The ore is so friable that a log washer is sufficient to disintegrate it thoroughly. A large part of the quartz, as coarse sand, is shovelled out from the washer. The flow of water carries fine sand with the clay through two long series of troughs, each series being about 500 feet in length, where even the finest sand has a chance to settle out. The clay-bearing water is now run through a revolving screen to remove chips, and then into large settling tanks, which are filled in succession. Here the liquid is allowed to stand for 24 hours or more, by which time the supernatant liquid is clear and is decanted to return to the circuit.

The thickened pulp in the bottom of the settling tank, called "clay slip", is now pumped at 100 pounds pressure through filter presses, the filtered water being returned to the circuit. The filter cakes, containing about 25 per cent. moisture, are placed on racks and wheeled in car loads into a drying tunnel, through which is blown a stream of air heated by steam coils. When thoroughly dry, the filter cake is broken to lumps and elevated to a large storage bin, ready for market.

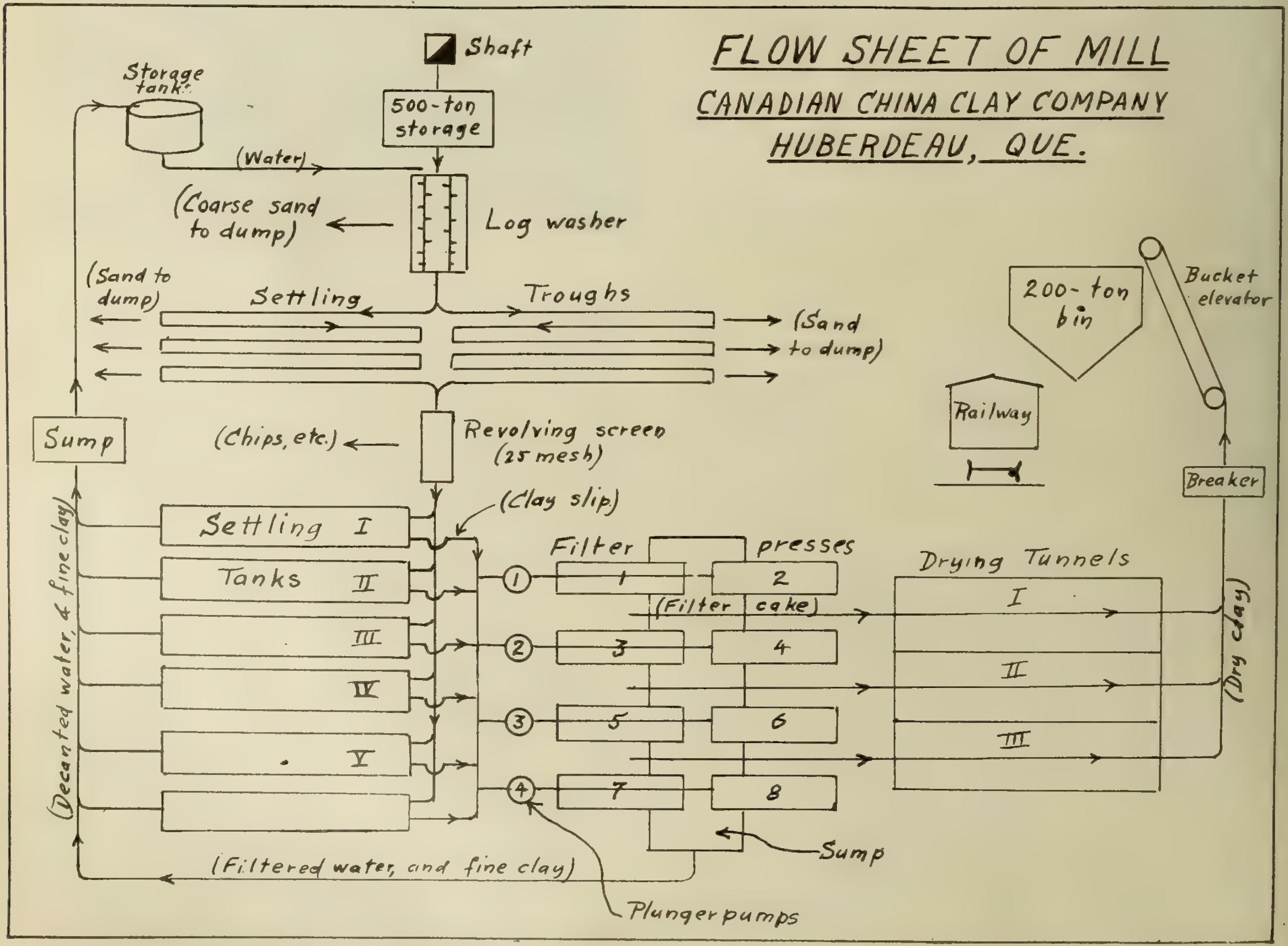
The present capacity of the plant is 10 tons of washed clay per day of 18 hours.

Preparation is being made to alter this flow-sheet with a view of economising labour and power and increasing the output. A sand pump will be installed at the bottom of the shaft to elevate the crude ore, with the mine water, to the surface. This will eliminate the need for the log washer. The pulp thus elevated will be passed through cone classifiers, which will eliminate not only the coarse sand now taken from the log washer, but a large part of the finer sand now caught in the settling troughs.

Quality of the China Clay

A typical analysis of the China clay is as follows:

Silica	47.50 p.c.
Iron Oxide	1.06



FLOW SHEET OF MILL
CANADIAN CHINA CLAY COMPANY
HUBERDEAU, QUE.

Alumina	36.98
Lime	0.23
Magnesia	(trace)
Loss on ignition	14.10
Potash	0.19
Soda	0.18
	100.24 p.c.

It is of a pure white colour, and its content of iron is less than that of the best Cornish clay imported into Canada. Its content of grit is unusually low, being about 0.08 per cent. in the form of fine particles of quartz not over 0.05 mm. in size.

This clay is competing favourably now with some of the best imported Cornish clay, the standard in the United States, as in Britain. For certain purposes the Huberdeau clay is superior to that brought from England, and it is on this account that its present market is available.

Fire Clay

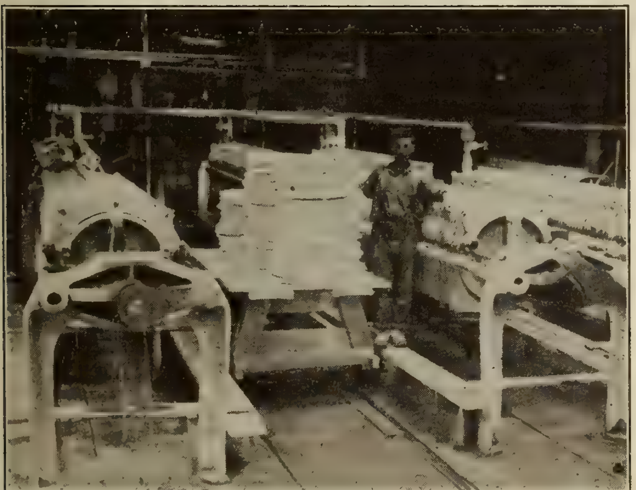
From the parts of the deposit stained with iron oxide a buff or cream-coloured washed clay can be produced, which has a limited use in commerce. At present none of this is separated, the natural mixture of clay and quartz being sold as saggar clay.

Saggar Clay

A notable feature of the deposits at present is the very large amount of fire clay available for making saggars and its excellent quality for this purpose. A Canadian plant has been using this material, in its natural state as shipped from the mine, for some time, and finds that its saggars last much longer than thosse from imported material. If, by judicious admixture with other clays, such favourable results can be generally obtained in ceramic plants using saggars, a very wide market will be opened for Huberdeau saggar clay.

Quartzite

The quantity of pure quartzite available in the Huberdeau deposits is very large. From the crude rock the China clay can be readily removed by washing and recovered. While it does not pay to treat the rock for the 11 per cent. of clay that is in it, if there were a market for the resulting pure silica as well, it might pay handsomely. In such a case, it would pay best to ship the crude rock from Huberdeau and treat it at the glass works or other point at which the silica was to be used. At present there is no such market in sight.


Filter Presses and Filter Cakes

The writer wishes to acknowledge the courtesy to him of those in charge of the operations of the Canadian China Clay Company. The manager is Mr. Alexander H. Smith, whose experience while tunneling in "The Bluff", Belgium, now stands him in good stead when mining the peculiar clayey ore at Huberdeau. The local superintendent is Mr. S. N. Tremblay, who is quite widely known in the bush-whacking fraternity, and has now succumbed to the inducements of life as a miner. These two Canadian engineers bid fair to retrieve the fallen fortunes of the Canadian China Clay Company, and to provide in the midst of the Laurentian Highlands at Huberdeau an additional unit for the ever-expanding mining industry of Canada.

Filter Cake at Exit of Drying Tunnel

T. A. P. P. I. MEETS AT EXPOSITION

New additions are being made daily to the program for the 1922 National Exposition of Chemical Industries as the opening date, September 11th, at the Grand Central Palace, New York, draws nearer. The days on which the various chemical and allied organizations will conduct the speaking program for the benefit of visiting chemical folks, have been tentatively arranged, but are still subject to change. The official opening of the Exposition will take place on Monday evening. The speakers will include Wayne B. Wheeler, general counsel for the Anti-Saloon League, who will talk on "The Attitude of the Anti-Saloon League toward Industrial Alcohol as a Commodity of the American Chemical Industry". Dr. Charles Herty, president of the Synthetic Organic Chemical Manufacturers of the United States, and General Fries, Chief of the Chemical Warfare Service, are also expected to speak.

Tuesday afternoon, the program will probably be directed by the Synthetic Organic Chemical Manufacturers of the United States. The Technical Association of the Pulp and Paper Industry will conduct the Wednesday afternoon session, the program already having been completed. Thursday will see the meeting of the Technical Photographic and Microscopical Society to which all branches of the chemical industry and consuming industries have been urged to attend. The program for the session under the guidance of the American Ceramic Society on Friday Afternoon, has not as yet been completed. The symposium on standardization, made up of a number of widely known authorities will probably be held Friday evening or Saturday afternoon. The dinner of the Salesmen's Association of the Chemical Industry at which Herbert Hoover will be the leading speaker, is scheduled for Wednesday evening, as is that of the American Society of Chemical Engineers.

The latest additions to the motion picture program, include several interesting reels added this week.

Where Credit Should Stop

The ancient feud between salesman and credit man will, in all probability, never be wholly settled, although there is really not the slightest reason why these two members of the business team should not get along handsomely. But the trouble lies in the fact that the object of the first is to expand business, brushing aside all obstacles while the other must see to it that business is not expanded at the expense of sound principles.

When the salesman—every salesman—learns that a sale is not good unless the buyer is good, and when the credit man learns what hard work it is to sell goods, and how tough it is to have a really good moral hazard condemned as unworthy, maybe there will be less fighting along this line.

At the same time, perhaps it is up to the salesman to see to it that he can conscientiously commend to the credit department every new customer he digs up. He is the man on the ground and in the field, and he has the first and best opportunity to size up conditions and circumtances for the benefit of the people back in the office; and there is not much room for argument on the proposition that if there are things which make the credit risk seem dubious, the house should be told of them, at the very least. In fact, in such a case the sale should not be made, except on terms which protect the house.

This brings to mind the case of a young paper salesman on an early trip out into a tough territory, who turned in an order for a notoriously bad credit risk. The shipment was held up until his return from the trip, and the credit man, who was really a human sort of person, was talking it over with him, in order to find out just how things looked, and whether the house might be justified in taking any sort of chance.

"How did this outfit strike you?" he injured. "They used to be bad medicine, and so far as we know they are still. Do you think we can ship on the usual terms in this case?"

"Well," said the salesman judiciously and with an air of wanting to lay all the cards on the table, "I think that maybe they might pay."

That credit man has never tired of relating this innocent remark, as showing the way the salesman typically looks at matters of credit. It is his pet story, and bids fair to become a classic.

"As if," he always concludes after the laugh, "as if that sort of estimate of a buyer would justify any credit whatever. Why, if you can say truthfully that a customer might not pay, there is room for hesitation, much less if the matter is the other way around."

It is perhaps unfair, at that, to put this as a typical case, for it can hardly be considered so. Every salesman of experience knows that if his customers do not pay he is himself bound to be charged up with the loss, one way or another; and he knows that eventually the man whose customers prove to be "n.g." from the credit standpoint is regarded as "n.g." as a salesman, fairly enough.

But the point which is most worth emphasizing in connection with a rather surprising instance which came up not long ago when a fairly stable-looking publishing business went bankrupt, is that the paper house should confine itself to the paper business, and not attempt the functions of a banker. And the latter is exactly what it is attempting when it extends credit beyond the usual limit or goes further, and gives direct financial aid to a customer.

This last is so unusual that perhaps few houses have occasion to refuse such aid. But exactly this occurred in the case referred to; and the result was all but disastrous to the paper house concerned, as might well have been expected. It is safe to say that those interested in the business have learned to stick to buying and selling paper, without adding to their troubles by assuming the burdens of another business.

Their excuse, which has been given at great length to their own bankers, was that the publishing enterprise looked so prosperous, and its paper buying was so much worth while, that the men in the paper house felt not only that they were taking no risk, but that they were holding an excellent customer by an entirely justifiable extension of accommodation when they advanced cash for the meeting of pressing bills.

Eventually, of course, it became painfully necessary to advance more money to protect that already spent; and the well-known process of throwing good money after bad went its usual course until the collapse came and the paper house found itself in the position of being decidedly the largest creditor of a concern virtually without assets. It was a costly piece of experience, and no business man should feel it necessary to duplicate it in order to learn not to go this far out of his proper course.

Obviously, in a case like this salesman initially concerned is the last man to blame, because such an arrangement as the actual loan of cash to a customer is beyond his authority. He might be responsible for enlisting the interest of his house in the customer, by over-enthusiactic reports of the activity of the customer's business and the customer's high standing; but he could hardly induce the men higher up to write their checks for thousands if they had not themselves made some sort of investigation or inspection, at least, and satisfied themselves of the superficial soundness of the business.

As a matter of fact, in the case in question the head of the publishing business, one of those surprisingly plausible men who are always able to secure backing and who are always proving that they do not deserve it, had "sold himself", as the saying goes, to the paper men, and thus led them to advance amounts in hard and hard-earned cash which could much better have been used in their own business.

Paper House Not a Bank

This is an exceptional case, as suggested; but it serves, like other particularly horrible examples, to point the moral, and to emphasize the fact that the paper house which permits itself to be used as a bank—by concerns, mark, which probably cannot secure accommodations from their own banks—is tempting fate. And the intelligent salesman, with the long view of his work, will see to it that nothing he can do to prevent this, as far as his own customers are concerned, is omitted.—Exchange.

The reforestation station conducted by the Ontario Government near St. Williams, in the county of Norfolk is doing excellent service. Its object is to replant suitable areas with the trees which once covered the whole Province and were a valuable asset, especially from an agricultural point of view. The station gives the careful farmer an opportunity to restore some of the riches with which nature has endowed the province and is an important feature in forest preservation. Last year 450,000 The party was taken off the boat late in the afternoon, will be ready for distribution. The preference so far has been for Scots pines but demand for hardwoods has been light.

G. E. Bryant, purchasing agent for Warwick Bros. and Rutter, King Street, Toronto, is spending his vacation on a trip up the Saguenay.

Automatic Pulp Grinder Regulation

By CARL E. BRAUN
Assistant Chief Electrician, Crown Willamette
Paper Company.

The load on electric driven pulp grinders is very fluctuating when not connected up to some kind of regulating device. This fluctuation depends mostly on how many pockets the motor is taking care of, the variation being greater in the case of a one pocket grinder and less as the number of pockets are increased; of course, assuming these to be driven by the same motor.

With the best skilled operator it is impossible to maintain a uniform load on a grinder motor, the load varying from 25 to 50 per cent above and below the average. In the case where power is being purchased on the peak load basis, from 25 to 40 per cent more power is being paid for than is actually used, that is, power is being paid for on the basis of a peak perhaps 25 to 40 per cent higher than a curve representing the average load.

It was largely to correct this condition and effect other economies that the Westinghouse Automatic load regulator for motor driven pulp grinders was recently installed at the Camas plant.

Figure 1 shows the installation of the regulator. By the use of two of these regulators, one for each of the two 1800 h. p. electric grinder motors, the following conditions have been corrected, viz: All peaks are prevented, all valleys are prevented, and best of all, is regulating the whole mill and keeping as near a straight load line as possible during the hours between 12 noon until 8 a.m. the next morning, which time we are allowed a load of 8,030 h. p. from the Northwestern Electric Co. Between 8 a.m. and 12 noon we are allowed but 4,030 h. p. and as the mill load proper is a little above this, the grinder room is down during this time, no regulation being maintained.

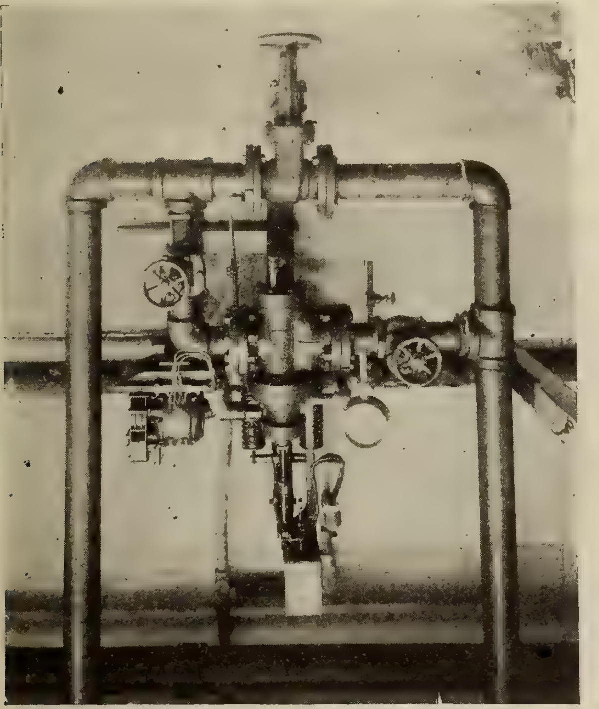


Fig. 1

By the above operations, we are making as near a straight load line as possible, assuring us maximum production and most efficient and economical use of electric power.

Figure 2 shows the load line before the installation of the regulator and Figure 3 the even line obtained after the installation. This latter line is maintained regardless of the small voltage variations or the motor power factor changes.

Description of Apparatus

The load regulator consists of two sets of apparatus. The control panel has mounted on it motor reversing switches, a watt element relay, a rheostat and the necessary resistances. The motor operated hydraulic element shown in Figure 1 consists mainly of a motor opening and closing, a valve placed in the main water pressure line which in turn controls the pressure in the grinder cylinders to be operated.

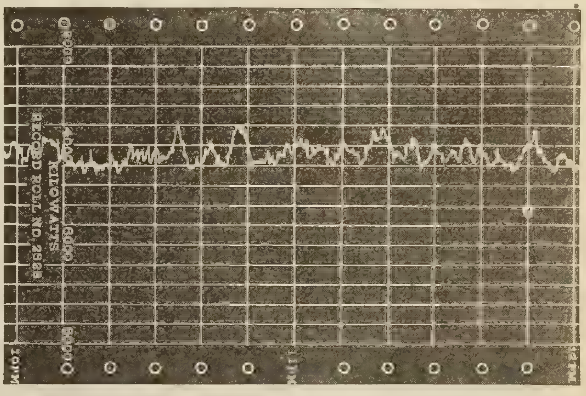


Fig. 2

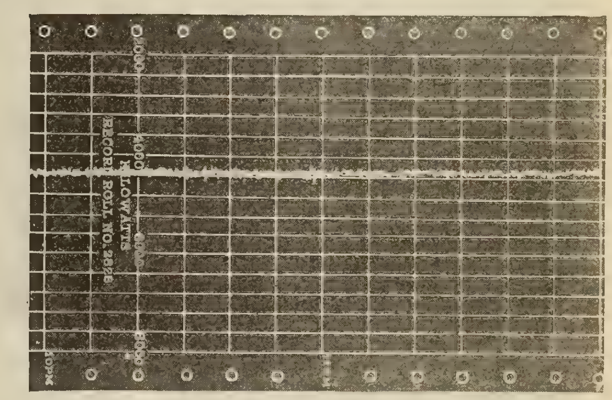


Fig. 3

Description of Operation

By referring to the schematic diagram shown in Figure 4, a very good idea can be had as to the operation and the simplicity of this regulator. The diagram shows the installation of the two regulators and how by the addition of two extra current transformers placed ahead of the total mill load and the addition of the switch (S) we can operate and regulate our whole mill load, keeping the total mill load line as even as possible.

The system consists of a motor driven hydraulic pressure pump from which we get a pressure of about 60 pounds in the pipe mains feeding both motor operated hydraulic elements 1 and 2. By having valve (AA) closed and valve (B) open, grinder is operating without any regulation which causes a variable load line on the meter chart similar to the one shown in Figure 3. Closing valve (B) and opening valve (AA) puts the motor operated elements in order for grinder regulation.

Rheostat (R) on the control panel is placed in shunt to the current transformers (CT) and the watt elements (WW). From the different settings of this rheostat we get the desired load we wish to carry and regulate on. During good regulation and regardless of the pockets being emptied and filled, the bar (X) is maintaining itself as near balance as possible.

Assume that the rheostat (R) is set so that the motor load is about 350 amperes and we wish to regulate on this setting, the bar (X) keeping its balance and the pockets full. Should one or more pockets grind out, this will in turn lessen the load on the motor and consequently the current in the watt elements, and cause the weight end (Y) of the bar (X) to drop down. This causes contacts (D) to come together and energizes the magnet (M), which closes the switch, causing the motor to operate and open the regulating valve, thereby giving the balance of the grinder cylinders an increase in water pressure. This causes the motor to take on more load and hence the increase in current on the watt elements exerts a greater magnetic pull on the bar (X). This separates the contacts (D) and the motor comes to a stop at that setting. If this load and current becomes too great then contacts (C) come together and the motor operates in just the reverse direction, that of closing the regulating valve just far enough so that the bar (X) maintains its balance. The complete operation takes but the fraction of a second and disregards the average grinder man's skill in keeping the pockets filled.

Regulating The Complete Mill Load

This is done by the addition of two extra current transfoirmers placed ahead of the total mill loads, their secondaries being connected to the shorting switch (S). This switch shorts the motors current transformers and puts the mill load current transformers in condition for operating and maintaining an even total mill load. Any changes in the mill load affects these current transformers and the watt elements and the operation from there on is exactly as explained in the preceding paragraph.

The 1800 h. p. Westinghouse Synchronous Motor is connected for motor regulation only and is set to regulate at nearly full load, thereby correcting to a great extent the power factor and keeping this correction steady. The operation is exactly as explained for the 1,800 h.p. General Electric motor, provisions not being made for total mill load regulation.

Numerous resistances and contacts are also employed as well as a water reaction cylinder on the hydraulic element, all of these tending to prevent hunting. The writer did not deem it necessary to go into these details but gives as briefly as possible the operation of the Westinghouse Automatic Load regulator for motor driven pulp grinders, as installed at the Camas plant.

BE A FIRE WARDEN AND LIFE SAVER IN STORE AND FACTORY

1. Put oily rags in proper metal receptacles.
2. Use only "strike on the box" matches.
3. Enforce neatness and have care always for fire prevention.
4. Do not allow smoking.

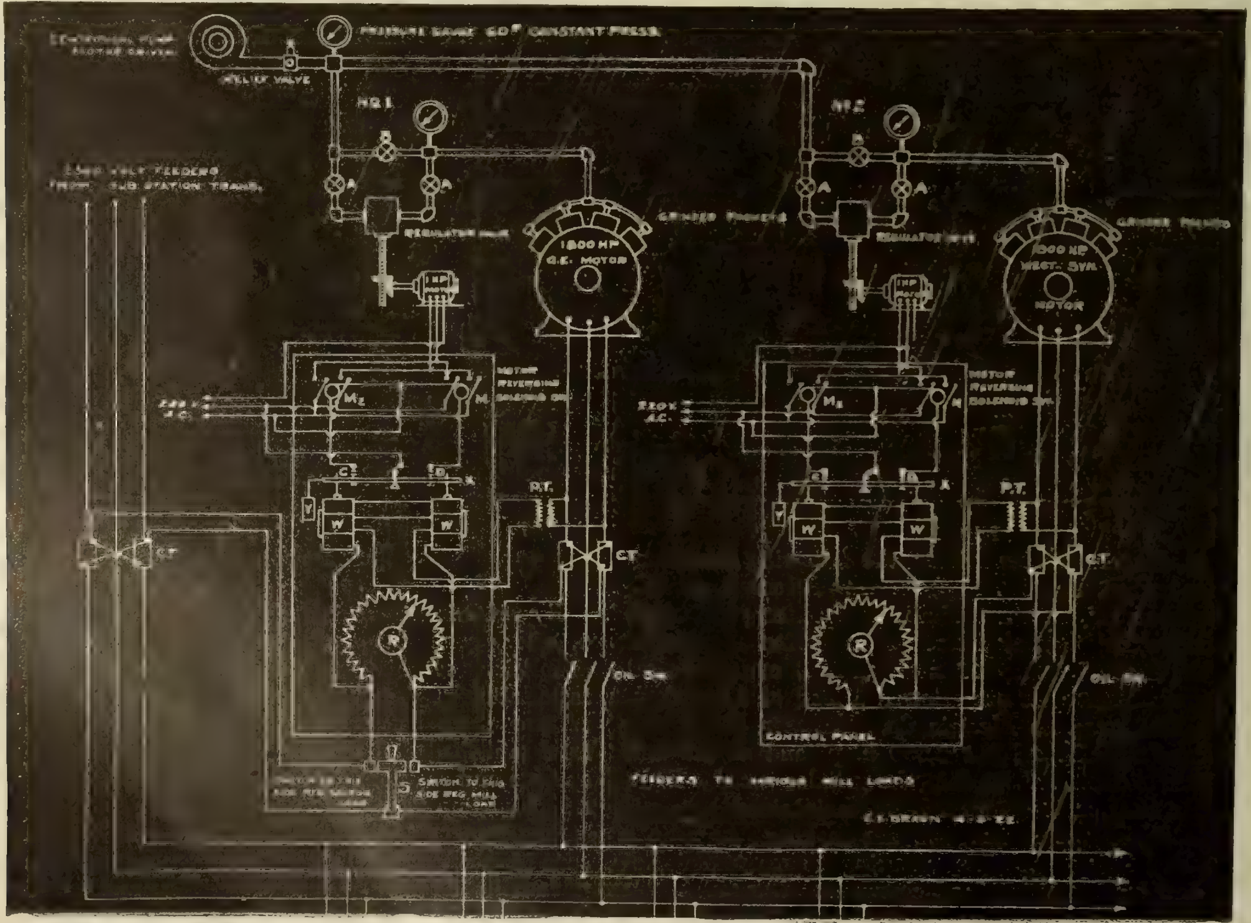


Fig. 4

A Dictionary of Pulp and Paper Mill Terms

SIZES OF PAPER

Those given here are the principal surviving names used in Great Britain and occasionally here. There are numerous others of more local use in England and for wrapping and millboards. They are chiefly of historic interest in America and in many cases are derived from ald watermarks as "Crown" or "Pott", or old methods as "Post" — from the pile of wet papers just couched.

Paper is now largely ordered or referred to by the size required and its substance number, which see. There is, fortunately, an increasing feeling in favor of standardization and elimination of ambigous terms.

QUARTO or 4to means as a rule a quarter of the size referred to

OCTAVO or 8vo means an eighth.

DUO DECIMO or 12mo means one twelfth.

*Indicates that name and size are same in United States and Canada.

†Indicates a Canadian size.

Name	Use	Size
Antiquarian	Drawing	53 x 31
	Plate	53 x 31
	Portfolio	53 x 33
	Writing	53 x 31
Atlas	Drawing & Chart	34 x 26
	Board	30 x 26
	Plate	34 x 27
	Millboard, Ex, Large	32¼ x 26½
	Portfolio, Ex. Large	35 x 27
	" " "	38 x 26†
Check Folio	Writing	17 x 24
Check Royal	Writing	19 x 26
Colombier	Drawing	34½ x 24
	Millboards	36 x 24
	Plate	35 x 24
	Writing	34 x 23
Copy	Cartridge	20 x 16½
	Writing	20¼ x 16
Crown	Millboards	16½ x 20
	Portfolio	15 x 19
	Writing	15 x 19
	Wrapping	15 x 20
Demy	Drawing	15½ x 20
	Writing	16 x 21
	Printing	22½ x 17½
		23 x 18
		24½ x 36½
	Cartridge	22½ x 17¾
	Portfolio	23 x 18
	Wrapping	18 x 24†
Double Cap	Writing	17 x 28*
Double Crown	Writing	19 x 30
	Printing	20 x 30
	Wrapping	20 x 30
Double Demy	Writing	21 x 32*
	Printing	36½ x 49 (1)
		22½ x 35½ (2)
Double Elephant	Wrapping	24 x 36
	Drawing	26½ x 40
	Writing	27 x 40
Double Folio (Double Post)	Writing	22 x 34
Double Foolscap		16½ x 26½
	Printing	17 x 27
	Blotting	16¾ x 26½
Double Pott	Writing	15 x 25
	Printing	15 x 25
Double Royal	Printing	42 x 56 (3)
Elephant	Writing	23 x 28
	Book	23 x 28
	Drawing	23 x 28
	Cartridge	23 x 28
Emperor	Writing	48 x 72
Flat Cap	Writing	14 x 17
Flat Foolscap	Writing	13 x 16
Flat Letter	Writing	10 x 16
Flat Foolscap	Writing	10 x 16
Folio (Folio Post)	Writing	17 x 22*
Foolscap	Writing	13¼ x 16½
	Book	13¼ x 16½
	Drawing	13¼ x 16½
	Cartridge	14 x 18¾
Imperial	Cartridge	21 x 36
	Writing	23 x 31
	Book	22 x 30¼
	Drawing	22 x 30¼

Quick Cook. See **Direct Cooking.**

Ritter Kellner. See **Direct Cooking.**

Schopper's Instruments. One of these is a machine for measuring tensile strength and stretch of paper. Another is for finding the resistance to folding.

Scott's Evaporator. A form of multiple effect evaporator largely used in soda pulp mills.

Selenium. An element At. Wt. 79.2 Melt. pt. 217° C., B. pt. 690° C.; only found in small quantity but often associated with sulphur. Very small amounts have been found exceedingly detrimental in the sulphite cooking process tending to decompose SO_2 and throw it out of useful action in the form of calcium sulphate, acting as a catalyst similarly to free sulphur but to a much greater degree.

Stuffing. Otherwise called calender staining or padding. The act of applying color to paper as it passes through the calenders.

Sublimation. A form of distillation in which a solid passes to a state of vapor and condenses to a solid again without passing through the liquid state. Sulphur is an example. Flower sulphur is the result of condensing hot sulphur vapors which have not been oxidized due to insufficient supply of air or have been chilled below the kindling temperature before combustion, usually the former, as the boiling point of sulphur is nearly 200° C above its ignition point. A source of trouble in the sulphite mill.

Substance Numbers. Numbers that refer to the weight per ream of certain standard sizes of paper, which make it possible to ensure that paper of same thickness or substance may be secured when ordering other sizes. For example the standard size for writing paper is 17 x 22. If this had been purchased at 20 lbs per ream and a buyer wanted paper of same substance but different size, say, 18 x 24 he would order 18 x24 No. 20.

Surface Sizing See **Tub Sizing.**

Top Sized See **Tub Sized.**

Index Royal	Writing	20 x 25
Large Post	Writing	16½ x 20¾
Medium	Writing	18 x 23*
	Printing	18¼ x 23
	Book	17 ½x 22½
	Drawing	17½x22½
Medium Post	Writing	18 x 22½
Pinched Post	Writing	14½ x 18½
Post	Writing	19 x 15¼
	Blotting	19 x 15¼
	Printing	19½ x 15¾
Pott	Writing	15 x 12½
	Printing	15½ x 12½
Royal	Cartridge	19 x 24*
	Writing	19 x 24*
	Book	19 x 24*
	Drawing	19 x 24*
	Printing	20 x 25
Super Royal	Writing	20 x 28*
	Printing	21 x 27
	Book	19¼ x 27½
	Drawing	19¼ x 27½
	Cartridge	19¼ x 27
Typewriter Double Cap	Writing	16 x 26
Wedding Royal	Writing	20 x 24

(1) Double quadruple demy, U. S. & Canada.
(2) In Great Britain & Canada (3) Double Royal, U.S. & Canada. (4) Cap, U. S.
Should mention Standard Substance numbers.

An Economically Efficient Paper Mill Steam Plant

Figures are now available showing the results of operation for six months of the Canada Paper Co's new Boiler Plant at Windsor Mills, Que., which is believed to have established a record in economy among Paper Mill Steam Plants burning coal.

The figures are particularly striking in view of the comparatively small capacity, — the normal load being only some 800 boiler horsepower — while the item for fixed charges included in the cost of steam delivered compares very favorably with large modern installations.

Steam Plants of less than 1000 H. P. present the most difficult problems in balancing expenditures and returns. Features such as Basements, Overhead Coal Bunkers and extensive coal handling equipment, etc., can seldom be justified from a financial standpoint since no saving in labor is effected thereby, while instruments and auxiliary equipment represent a comparatively high proportion of the total cost and must be carefully chosen to ensure that the increased economy gained warrants the investment.

In the case of the Canada Paper Co's installation, further limitations were imposed by the fact that the new Boiler House was built on the same site as the old plant which had been in service for over 30 years, and had to be built in sections to keep the Mill in continuous operation. Actually the entire work was carried through without causing a shut-down of the Mill.

The plant comprises three Goldie and McCulloch water tube boilers of the Babcock and Wilcox type, each containing 2,467 square feet of heating surface, equipped with Superheaters and 'Type E' Stokers. Two boilers are normally in service operating at about 160 p.c. rating. Space is provided for a fourth unit.

Economisers are installed proportioned to suit the particular conditions of heat distribution, and short gas passages and absence of steel flues between Boilers and Economiser ensure maximum utilization of all available heat in the gases.

The Economisers are responsible for an increase in economy of approximately 5 p.c. under present conditions, while the Superheaters are justified by eliminating condensation in the long steam pipe lines and in increasing the economy of the main Engines. Changes are now being made to one of the Engines to further decrease the steam consumption during the summer months so that no steam may be wasted to the atmosphere.

A Coal Bunker with capacity for two to three weeks' supply is arranged conveniently for filling the Stoker Hoppers by hand, the bunker being served by an Incline Conveyor from the Crusher Pit and Track Hopper, to which coal is delivered either from Railway Cars or from the Yard Storage.

Special Meters are provided on the Boilers to guide the Firemen in obtaining maximum efficiency of combustion in the furnaces, and by means of a separate Recording Flow Meter on the independent steam line to the Auxiliaries it is possible to keep a check both on the steam consumption of soot blowers, ash conveyor, etc., and also the times when they are used.

With the Mill running six days per week the efficiency of steam generation in the Boiler Plant has been maintained at around 79 p.c. average, including the Sunday banking, while a check run taken over seven weeks, with careful attention to weight of coal used and with periodic analyses taken of the calorific value, showed an even higher efficiency.

The following economic results are given. It will be noted that the steam and coal used per ton or pound of paper includes the heating of the Mill as required during the months of March and April. For the purpose of comparing the cost of producing 1000 pounds of steam with other plants the price and heat value of the coal must, of course, be taken into consideration. The figure of $7.50 per ton of coal is given as an average price.

Mill Operation, 6 days per week.

Average Daily Paper Production, 53.5 tons per 24 hrs.

Kind of Paper, News and Wrapping.

Superheated Steam delivered to Mill per Ton of paper (including heating Mill as in March and April), 9470 lbs.

Total Coal used per lb. of Paper (including Blr. Ho. Auxiliaries, Banking over Sundays, and Heating Mill), .593.

Total Coal Heat Units per lb. of Paper (including ditto), 7110 BTU.

Total Coal Heat Units per 1000 lbs. Steam fr. and 212 deg., delivered to Mill, 1,256,000 BTU.

Cost per 1000 lbs. of Steam (including Coal at $7.50 per ton, 12,000 BTU, Labor and Electric current for Blr. Ho. motors).

Superheated, d/d to Mill 54.25c.

Fr. and at 212 deg. d/d to Mill 45.30c.

Fr. and at 212 deg., generated 42.80c.

Fixed charges, including Repairs. (15 p.c. of cost of Plant), per 1000 lbs. Steam delivered to Mill	10.6c
Cost per Ton Paper for Coal ($7.50 ton, 12,000 BTU)	$4.45
For Labor and Elec. Current in Blr. Ho.	.52
	$4.97
For Fixed Charges (15 p.c. Plant Cost)	1.20
	$6.17

The Plant was designed and supervised under construction by F. A. Combe, M.E.I.C., Consulting Combustion and Steam Engineer, of Montreal, with the object of securing maximum efficiency with minimum cost.

(Mr. Combe has contributed the following explanatory notes and remarks regarding the efficiency of Steam Plants.)

When one considers that an increase in Steam Plant efficiency of 10 p.c. corresponds to a reduction in coal consumption of approximately 13 p.c., also that, in the case of Paper Mills, a saving of 10 p.c. of coal consumption represents a straight *increase in net profits per ton of paper sold of from* 50c to $1.00, it will be realized that the subject of economy in the Steam Plant is worthy of considerable attention to-day.

It is safe to say that *savings of* 10 p. c. *to* 30 p. c. in coal consumption can be made in the large majority of Paper Mills, especially the smaller ones, not altogether by better performance in the Boiler House but, in a great measure, by a re-arrangement of the steam and heat distribution.

Statements made as to the performance of Plants and Mills are often misleading due to the fact that the terms used to indicate efficiency and steam costs are not clearly understood or defined, for instance.

Fuel Consumption per Pound Paper. It is customary to mention as a factor in the efficient performance of a Paper Mill the "Pounds Coal per Pound Paper". Since the calorific values, i.e. the number of heat units contained in a pound, — of the common grades of coal on the market to-day vary by 15 p.c. and over, a more correct indication of the efficiency is "Fuel BTU's per Pound Paper"; that is to say the weight of coal or fuel burned per pound of a certain grade of Paper multiplied by the heat units in a pound of the fuel.

Cost of Steam Production. Similarly the cost per 1000 lbs. of Steam delivered from a Boiler Plant is often vaguely stated without reference or consideration to the quality of the steam produced or the temperature of water furnished to the Plant. These factors may cause a variation of anywhere up to 20 p.c. in amount of coal used alone, as it will be clearly seen that more heat is required to generate steam, say, at 200 lbs. pressure and 150 deg. superheat from water at a temperature of 60 deg. than to generate steam at 100 lbs. pressure without superheat from water at 200 deg.

To compute the efficiency of steam generation and to have a common ground for comparison of steam production by boilers and boiler plants operating at different steam pressures, degrees of superheat and supplied with water at different temperatures, it is necessary to correct all such conditions of pressures and temperatures to a single basis. This basis is taken as the equivalent amount of water at 212 deg. evaporated into steam at the same temperature, (atmospheric pressure), or, as it is commonly termed "lbs. water."

The Output Efficiency of the Steam Plant alone is, then, indicated by the total heat units in coal supplied to the Plant per 1,000 lbs. steam fr. and at 212 deg. delivered from the Plant; and the *Economic Performance* is the total cost of 1,000 lbs. steam fr. and at 212 deg. delivered, including Fuel, Operating expenses, and Fixed Charges. In this way adjustment is made for the amount of steam or hot water returned from the Mill to the Boiler Plant, which is a debit, and also for the pressure and superheat of the steam.

Efficiency vs. Economy.—Efficiency and Economy are not synonymous in the matter of generation and utilization of steam. While Efficiency is a measure of the percentage of heat usefully employed, Economy considers the total cost of production, and the latter is, of course, the important factor from a business standpoint.

The aim in design and operation of a Steam Plant must be to utilize in the most efficient manner the fuel, — not necessarily of the lowest price per ton, — which will give the greatest production of steam for a dollar, taking into account Cost of Fuel, Labor, Auxiliary Power, Fixed Charges and Repairs on Plant. In other words Steam should be treated as any other manufactured commodity.

The economical utilization of steam in the Mill or Factory must be considered in conjunction with the Boiler Plant as a complete system of heat exchange and recovery. To treat them separately cannot give the best results since on such a heat balance depends the advisability of using Superheated Steam and, in a large degree, Economisers.

It is possible to illustrate in simple diagrammatic form where all the heat units purchased as coal go to in a Mill as compared with the actual requirements. Such a diagram of an existing plant generally reveals where unnecessary losses occur or where heat can be used to better advantage, not only in the Boiler Room but in Heating, Power and Process Systems in the Mill.

No arbitrary statements can be made as to the limits in size or the type of a Boiler Plant to justify the installation of such features as Economisers, Superheaters or Mechanical Stokers, as each case is governed by some special conditions and by the heat balance of the system, and must be judged by itself.

The above remarks may seem obvious to many, but they are usually not sufficiently studied in the design of, or in additions made to, plants, and the resulting waste of fuel is very high. In the majority of cases this waste can be largely overcome by comparatively small expenditures intelligently made in remodelling, yielding returns of over 100 p.c.

Fred. L. Ratcliffe, head of the Ratcliffe Paper Company, Limited, York Street, Toronto, is spending a few days in Batavia, N. Y. on business connected with the district Rotary Clubs.

Technical Section

REVIEW OF RECENT LITERATURE

Properties, Chemistry and Testing of Raw Materials and Finished Products

A-1 Benzidine Hydrochloride as a Reagent for Lignocelluose. C. VAN ZIJP. **Pharm. Weekblad,** lviii, 1539-1542, (1921); **Analyst,** xlvii, 35, (Jan. 1922). Although a solution of benzidine hydrochloride containing no free hydrochloric acid gives a more intense (red orange) coloration than an acidified solution (orange) with lignocellulose, it is preferable to have free hydrochloric acid present, since it renders inactive other constituents of woody fibers which give a brown coloration with the reagent. The solution is prepared by dissolving 0.2 gram benzidine in 19 cc. of water and 1 cc. of 25 per cent. hydrochloric acid, and will keep well in a bottle of brown glass. The test may be applied directly to sections, preferably washed with alcohol containing 1 per cent. of hydrochloric acid, to remove any iron derived from the microtome. In testing wood meal (or pulp) for lignified substances the preparation is treated first with the benzidine reagent, and then, without washing, with a drop of iodine and potassium iodine solution, and exposed until all the iodine has evaporated; the blue-black coloration given by benzidine hydrochloride with iodine and potassium iodine solution disappears, whilst the wood meal nucleus remains dark blue and the lignified constituents orange. -A. P. -C.

A-1 The Constitution of Pine Lignin. II. PETER KLASON. **Ber.,** lv, 448-455, (1922); **J. Soc. Chem. Ind.,** xli, 247A, (April 15, 1922). The homogeneity of calcium alpha-ligninsulphonate is established by the uniformity in composition of specimens of the beta-naphtylamine salt obtained from it by fractional precipitation with beta-naphthylamine hydrochloride. A modified formula for alpha-lignin is proposed. -A. P. -C.

A-1 .Lignin as it Occurs in Wood. PETER KLASON. **Ber.,** lv, 455-456, (1922); **J. Soc. Chem. Ind.,** vli, 247A, (April 15, 1922). A specimen of lignin obtained from pine wood by repeated alternate extraction with boiling water and alcohol containing a little acetic acid was found, after allowance for the water contained in it, to give analytical results in excellent harmony with those calculated for lignin. The substance also gave the typical lignin reactions. As far as can be obsrved by reason of the color of the solutions, lignin and ligninsulphonic acid are optically inactive. -A. P. -C.

A-3 Derivatives of Straw Lignin. F. PASCHKE. **Cellulosechem.,** iii, 19-21, (1922); **J. Soc. Chem. Ind.,** xli, 247A, (April 15, 1922). Derivatives were prepared from lignin isolated from straw by digestion with sodium carbonate: (1) by heating with phenylhydrazine, (2) by heating with nitrosodimethylaniline and hydrochloric acid, (3) by treating with sulphuryl chloride in the cold, (4) by heating with sulphuryl chloride at 100° C. undr pressure, (5) by treating with phosphorus pentachloride in tetrachloroethane solution. The properties of these derivatives are described. It is suggested that (4) and (5) might find technical applications as lacquers. -A. P. -C.

A-3 The Use of Cereal Straws for Paper Making. CH. GROUD. **Papier,** xxv, 156-159, (April 1922). The author briefly rviews the paper making qualities of the various cereal straws and suggests that small plants be established in the various agricultural centers for transforming part of the straw into feed and the remainder into paper pulp. -A. P. -C.

A-14 Gloss Characteristics of Photographic Papers. L. A. JONES and M. F. FILLIUS, Research Laboratory, Eastman Kodak Co. **Brit. J. Phot.,** lxix, 216-218, 229-232, (1922); **J. Soc. Chem. Ind.,** xli, 392A, (May 31, 1922). The gloss of a paper is dependent on the relation between the light which is diffusely and regularly reflected respectively from the paper surface. An instrument termed a "gonio-photometer" is described, which consists essentially of a standard light source to provide incident light (preferably parallel), and a photometer by means of which the intensity of light reflected at various angles by the paper can be measured. The gloss value of the paper is obtained by comparing the brightness of the surface when viewed normally, and at the angle of specular reflection, the incident light falling at 45°. With another instrument, the "gloss meter", direct measurement of the relative brightness of the surface viewed normally at the angle of regular reflection is obtained. The illuminating beam is incident at 45°, and the light rays leaving the paper surface normally and at 45° are brought to intersect at 90° in a photometer tube. The brightness of the two images can be varied by means of neutral tint wedges and a photometric balance obtained. The scale carried by one wedge is calibrated to read the ratio of brightness, or directly in gloss values. The gloss value increases rapidly with increase in density of image on the paper, and measurements should therefore be made on fixed, unexposed paper. Classification of papers according to the numerical ranges of glass value is discussed. -A. P. -C.

A-15 Determination of the Fluorescent Power of Cellulose. S. J. LEWIS. **J. Soc. Dyers Col.,** xxxviii, 68-76, 99-108, (1922); **J. Soc. Chem. Ind.,** xli, 366A, (May 31, 1922). The investigation of the fluorescent properties of cellulose previously described (See this journal, xx, 235, March 23, 1922, has been continued and a method of spectro-fluorescometry has been developed which is capable of an accuracy of 1 per cent. relative to the fluorescence of filter paper (Whatman No. 42) which has been chosen as a standard. The moisture content of a substance has but little influence on its fluorescent properties, so that all the substances as yet examined have been used in their air-dry solid state. The fluorescent properties of cellulose, hydrocellulose, cellulose acetate, viscose, nitrocellulose, wool, silk, wood, and sugars have been quantitatively expressed by means of curves, the forms of which show definite relationships to the characters of the substances examined. No general conclusions as to chemical constitutions can be drawn as yet. -A. P. -C.

B. — Forestry

B-3 B-6 A Forest Survey from the Air. ELLWOOD WILSON, Laurentide Co., **Pulp and Paper,** xx, 453, (June 1, 1922). A description of an aerial forest survey, as actually carried out, showing the ease and accuracy with which observations could be made. Though the author does not give any cost figures, he states that it is twenty dollars per square mile less than that charged by a large firm of consulting foresters for a big tract of land much more favorably situated and easier of access than that under consideration, and thirty dollars less than figures of one of the large companies for work done in 1920. -A. P. -C.

E.— Sulphite Manufacture and Equipment

E-1 The Reaction Between Iodine and Sulphurous Acid. R.M. MACAULAY. **Chem. Soc. Trans.**, cxxi, 552-556, (March 1922). Sulphurous acid is quantatively oxidized to sulphuric acid by decinormal iodine without the separation of sulphur. The intermediate formation of the yellow compound SO_2.HI, which occurs in solutions of moderate concentration, has no influence on the final result. The low results obtained when sulphurous acid is exposed to the air during the titration are due entirely to evaporation of sulphur dioxide, the amount of atmospheric oxidation being negligible. Sodium sulphite solution is more readily oxidized than sulphurous acid; consequently atmospheric oxidation is a disturbing factor when sodium sulphite is titrated with iodine. Since the reaction between sulphurous acid and iodine is not reversed under the state of dilution obtaining in volumetric analysis, the addition of sodium carbonate to neutralize hydriodic acid is unnecessary; and since a sulphite solution is so quickly oxidized it is not necessary to allow a time interval for such oxidation by iodine to be completed. -A. P. -C.

E-1 Preservation of Starch Solution. N. KANO. **J. Chem. Soc. (Japan)**, xlii, 9745, (1921); **Chem. Abs.**, xvi, 1055, (Apr. 10, 1922). Alcohol, ether, acetone, camphor, toluene, phenol, chloroform, glycerol, naphthalene, carbon disulphide and hydrochloric acid were tried as preservatives for starch solution for use in iodometric titrations. The most satisfactory preservative is hydrochloric acid (0.5cc. of twice normal acid to each 50cc. of starch solution), when the titration is to be done in acid medium, and carbon disulphide (one drop to each 50 cc.) when in neutral medium. -A. P. -C.

E-2 Sulphite Waste Liquor Lactone. S.V. HINTIKKA. **Pappers Travarü-och Industritidskrift for Finland**, No. 10, 150, (1921); **Chem. Abs.**, xvi, 491, (Feb. 10, 1922). The author repeated B. Holmberg's experiment (See **Extraction of Sulphite Waste Liquors with Ether and Benzene,** this journal, xix, 1028, Oct. 6, 1921) using birch and aspen woods, but failed to obtain the crystalline lactone reported by Holmberg. It may be that this compound is characteristic of the sulphite waste liquor from pine wood. -A. P. -C.

E-2 F-2 Process of Recovering Solids from Waste Pulp Liquors. U. S. A. Patent 1,396,028, Nov. 8, 1921. Hot waste pulp liquors are concentrated and cooled by "self-evaporation", further quantities of water are then frozen out and the concentrated liquor is dried in the usual manner. -A. P. -C.

E-0 High Grade Sulphite Pulp. Eng. Patent 170, 964, E. BRONNERT, Dec. 21, 1921. Wood is cleaned, chipped, and treated with dilute sulphuric acid under pressure, drained, and neutralized. The wood lignin is thus decomposed and subsequently dissolved by boiling in known manner with calcium or calcium and magnesium bisulphite under pressure, yielding a nearly pure alpha-cellulose particularly suitable for making pure viscose and cellulose acetate. -A. P. -C.

E-0 Process of Making Wood Pulp. U. S. A. Patent 1,413,716, F. K. FISH, Jr., April 25, 1922. The chips are steamed, placed under vacuum, treated with superheated water to dissolve out the water soluble constituents and melt the resins, placed under partial vacuum, treated with hot acid liquor under pressure, treated with cold water as soon as the hot liquor has been removed, and finally washed and bleached as usual. -A. P. -C.

F. — Soda and Sulphate Manufacture and Equipment

F-2 The Use of Waste Lime for Fertilizer Purposes. OSKAR LECHER. **Chem. Ztg.**, xlv, 794-795, (1921); **Chem. Abs.**, xvi, 308, (Jan. 20, 1922). Analysis of the lime obtained after treatment of straw with milk of lime under 3 to 4 atmospheres shows that the content of nitrogen, magnesia and phosphoric acid are too small appreciably to increase its fertilizer value, but there are no substances harmful to plants. The soluble silica (6.-16 per cent on the air-dried sample) advantageously increases the absorptive power of the soil. -A. P. -C.

G. — Pulp Treatment and Drying — Operation and Equipment

G-10 K-14 Hydraulic Presses in Paper and Board Mills. A. LAMBRETTE. **Papeterie**, xliv, 206-210, 242-253, (March 10 and 25, 1921). A discussion of the various methods of modernizing old pressing equipment or of adding to it, in the most economical and efficient manner. -A. P. -C.

H. — Bleaching, Bleach Manufacturing and Equipment

H-5 Method of Bleaching Paper Pulp. U. S. Patent 1, 413, 154, J. C. BAKER, assignor to WALLACE & TIERNAN CO., INC., April 18, 1922. A further amount of chlorine is incorporated with a solution of calcium hypochlorite prepared according to U. S. Patent 1,403, 993 (See C. F. WALLACE and J. C. BAKER, this journal, xx, 438, May 25, 1922,) after allowing the latter to settle to remove the impurities. The liquor thus prepared must be used at once; or, the alkaline hypochlorite and chlorine solutions are prepared separately and mixed in desired proportions just before using. -A. P. -C.

K. — Paper Manufacturing and Equipment

K-1 Maintaining Basis Weights of Paper. PARKER K. BAIRD, Inland Empire Paper Co., Millwood, Wash. **Paper Trade J.**, lxxiv, No. 15, 185-191, (April 13, 1922); **Paper**, xxx, No. 7, 32-37, (April 19, 1922). A description of the system of records used successfully at the Inland Empire Paper Mill. -A. P. -C.

K-4 Process for Treating Waxed Paper Stock. U. S. A. Patent 1, 410, 739, S. H. DUNWELL, March 28, 1922. The waxed stock is placed with water in a beater having a vertical shredding roll with teeth at one end of the midfeather and a vertical beater roll and coacting bedplate at the other end, the two rolls being connected together by means of a belt and driven together. Means are provided for heating the stock either directly or indirectly. Sufficient hydrochloric acid is added to decompose the size and aluminum compounds in the stock, and the stock is heated above the melting point of the wax to be removed (**e.g.**, 150°F. for paraffined stock). The freed liquid wax rises to the surface and is removed by a trough-like skimmer and filtrated into a tank. After treatment in this beater, the stock is dewatered and then treated in a second beater with an alkaline solution, **e.g.**, soda ash. -A. P. -C.

K-6 Shredder and Washer for Fibrous Stock. U. S. A. Patent 1, 413, 597, J. E. LAPPEN, April 25, 1922. Also Can. Patent 219, 160, May 30, 1922. A shredding drum provided with radially projecting pins rotates in a casing fitted with fixed pins or teeth in the lower portion and with parallel spirally extended blades in the upper portion which serve to feed stock through the apparatus. -A. P. -C.

K-4 Billingham Waste Paper Recovery Process. U. S. Patent 1, 399, 184, M. C. J. BILLINGHAM, Dec. 6, 1921. **Paper**, xxix, No. 15, 12-13, (Dec. 28, 1921). This patent covers an apparatus for carrying out the process covered by U. S. Patent 1, 384, 987 and Can. Patent 213,

(Continued on page 724)

UNITED STATES NOTES

Governor Baxter of Maine has announced a slogan which he hopes will stir the people of his State into action in coping with the fuel crisis. It is "Cut a cord of wood and cut out coal." He calls for big "wood-chopping bees" as a further means of relief, and there is every indication of a tremendous response. Director Andrew P. Lane of the Maine Fuel Administration has sent out more than 2,000 letters asking for suggestions, advice and help in coping with the task. Prominent citizens throughout the State lead the wood-chopping parties into the woods and assist in hauling and distribution.

According to the American Metric Association, the National Research Council, a leading scientific body, has declared itself in favor of the extension of the use of the metric system in commercial transactions in the United States. The metric system already is in use to a large extent by the United States Bureau of Standards, whose director, Dr. S. W. Stratton, is an advocate of its gradual general adoption.

Clarence F. Williams, for many years with Marcus Ward & Co., Inc., and lately with Coyle & Grant, will in future be New York City representative for the following factories: Hopper Paper Company, Johnsonburg, Pa.; B. Hopper Company, Kalamazoo, Mich.; Kalamazoo Stationary Company, Kalamazoo, Mich., and Hopper Paper Company, Inc., Richmond, Va., Mr. Williams has opened up a sample room at 200 Fifth Avenue, New York.

In the opinion of Folke Sundblad, president of the Wood Pulp Trading Company, New York, who returned recently from a business trip to England, Germany and the Scandinavian countries, foreign sulphite prices will rise steadily for some time to come.

A United States Consular agent in Chile reports that an American paper manufacturing concern has found a market in Chile for tags and paper napkins in spite of the fact that its price for the articles was higher than that asked for Japanse supplies. American goods have artistic value and quality in their favor when competing with cheaper goods of foreign makes.

A prominent paper man, Mr. Ross P. Andrews, of the R. P. Andrews Paper Company, has accepted the chairmanship of a special committee on fuel and transportation named by the Merchants' and Manufacturers' Association of Washington, D.C. Mr. Andrews has left Washington on a trip of investigation into the mine situation in Maryland and West Virginia. Plans for fuel distribution in Washington will be formulated when Mr. Andrews returns and submits his findings.

A new kraft wrapping paper mill is being planned by the Filer Fibre Company of Manistee, Mich. The cost of the projected addition will be about $600,000. It will be operated in connection with the company's pulp mill and will be equipped to turn out 50 tons of kraft paper daily. To carry out its expansion plans, the company announces an issue of $500,000 first mortgage 7 per cent serial gold bonds, dated July 1, 1922, and payable beginning July 1, 1925, the installments continuing to July 1, 1935.

480 gallons of rubber latex obtained from England for experimental purposes by the Paper Division of the Department of Commerce, have been distributed to paper manufacturers who have become interested in the possibilities of the latex as an agent in the making of papers. The Bureau of Standards, which has received a quantity of latex, plants to test it out in the production of writing, book and wrapping paper, to determine if it adds strength and folding qualities to the paper as is claimed by the English inventor.

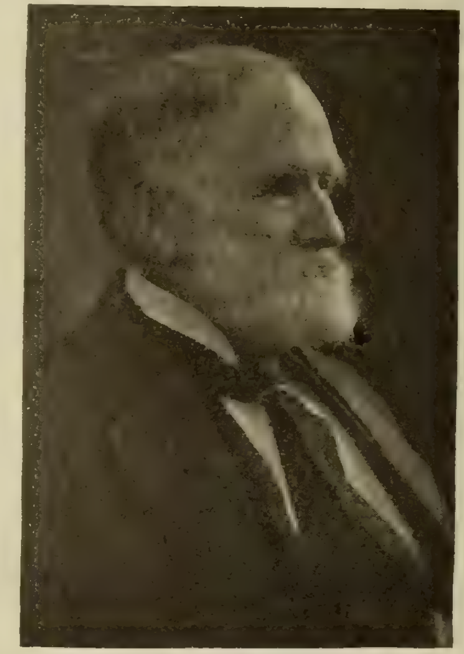
Andrew P. Lane, who was appointed by Governor Baxter to direct the present fuel emergency in Maine, is traffic chief for the Great Northern Paper Company. Mr. Lane has just given out figures on coal consumption by Maine's pulp and paper mills showing that they use 633,000 tons of soft coal annually. This is the largest amount used by any one industry in Maine, nearly equalling the total amount of coal consumed by all other industries combined.

Fox River Valley mills in Wisconsin may have to shut down unless supplies of coal reach the valley in sufficient quantity in a very short time. Surveys of the situation show that there is a serious shortage of fuel at almost all of the plants in the district. Already several mills are trying to keep going so far as possible by burning wood. Others have notified jobbers that they will have to greatly curtail production until the fuel situation improves.

MR. JOSEPH FORD IS DEAD AT 90 YEARS

Mr. Joseph Ford, well known as a great paper manufacturer in the district of Quebec, died on Saturday morning at Portneuf, suddently, at the age of 90. For years hundreds of workingmen have been earning their living in Mr. Ford's mills which were operated even four at the time at a certain period, a few years ago.

Mr. Ford leaves three daughters, Mrs. Sewell, of Portneuf, Mrs. Dalziel and Mrs. Lindsay, as well as three sons, Messrs. Joseph, Thomas and Rowland Ford, all engaged in paper manufacturing with their father.



The deceased came to Canada from England at the age of 18 and started as an employee in a local paper mill. In 1870, Mr. Ford was building a mill of his own and started operations which resulted in the accumulation of a moderate fortune.

PULP AND PAPER NEWS

The Victoria Paper and Twine Company, Limited, is sending out from its head office, Wellington Street, Toronto, a series of what might be termed business editorials which have been cleverly written and which contain much food for thought by the Canadian business man who thinks in terms broader than his own particular institution. The series comprises six articles and they are being sent monthly to members of the paper trade under such striking titles as "Patriotism," "Co-operation", "The Gentleman", "Discipline," "Loyalty," "Freedom." Each of the editorials is printed on a neat card punched for hanging in the office and are initiallel by the General Manager of the Company, Charles V. Syrett.

Fifty years of service with Messrs. Warwick Bros. and Rutter, wholesale and manufacturing stationers, King Street, Toronto, is the record attained by Thomas Barff, who was honored last Saturday by the presentation of a purse of gold from the firm and an easy chair from his fellow-employes. Mr. Barff has the distinction in the organization of being its only member at present in its employ to have known the firm's founder. There are several other employees with Warwick Bros. and Rutter who have been with the firm from thirty to forty years.

F. W. Field, His Majesty's Trade Commissioner, has just returned to Toronto after two months spent in England studying trade conditions there. Summing up conditions in the Old Land, Mr. Field stated that the outlook was much brighter than it was a year ago and there was a decidedly better feeling among the business men of Great Britain. He announced that the Department would continue to operate its three branches, in Toronto, Winnipeg, and Montreal.

Walter S. Boyd, formerly sales manager for Price Bros. and Co., Ltd., was in Toronto during the past few days. Mr. Boyd is now connected with the Deerfield Valley Paper Company, Munroe Bridge, Mass., of which he is the sales manager.

G. R. Warwick, President of Warwick Bros. and Rutter, Limited, wholesale and manufacturing stationers, King Street, Toronto; A. F. Rutter, Vice-President; H. C. Wood, General Manager, and William Warwick, Treasurer, have returned to Toronto after an enjoyable motor trip through New York State. Stops were made at Watkin's Glen and other points and the outing proved a pleasant diversion from the cares of business for a few days.

Mr. Martin, of the National Paper Goods Company, Hamilton, and several members of the envelope trade in Toronto attended the meeting in Montreal last week of the Envelope Manufacturers' Association at which an address was given by Secretary Hulbig of the American Association. A survey of conditions in the trade revealed considerable optimism as to future business and a fairly prosperous position of the envelope industry at the present time.

N. Nathenson, a prominent stationery dealer in Sydney, N. S., was a business visitor to Toronto during the past week.

Donald S. Porter, sales manager of the Rudd Paper Box Company, Toronto, has dropped the cares of business for a couple of weeks and has gone on a canoe trip in the Georgian Bay district.

Charles V. Syrett, head of the Victoria Paper and Twine Company, Limited, Toronto, and Mrs. Syrett, were passengers on the Rapids Prince which ran aground in the Long Sault Rapids a week ago. Edward Newell, of the Dominion Envelope Company, Toronto, was another Toronto man to go through the rather perilous experience. The party was taken off the boat late in the afternoon with no, ill effects from their adventure.

The Rudd Paper Box Company, Limited, Richmond Street, Toronto, have designed a very attractive container which they are making for the Willard Chocolate Co., in connection with an ice cream sandwich novelty which the latter company has just put on the market.

Paper Sales, Limited, Colonial Building, King Street, Toronto, are sampling the Canadian paper trade with a new and handsome line of cover paper known as "White Japanese Ivory" put out by the Royston Paper Company, of Boston, whose products are being handled in the Canadian territory by Paper Sales.

A. P. Costigane, Pulp and Paper Makers' Safety Engineer, is back at his desk again in Toronto after an enjoyable ten days spent with his family at Big Bay Point, on Lake Simcoe.

Confirmation was secured this week of the sale of the limits of the R. S. Potter Lumber Co., together with mill site and machinery, to the Ontario Paper Company, of Thorold, Ont., and the Hawke Lake Lumber Co., of Monteith, Ont. It was a cash sale for a substantial amount and it is understood that the Hawke Lake Lumber Co., intend operating on quite a large scale on the limits thus acquired. A rossing plant will likely be installed on the Watabeag River on the T. & N. O.

Col. Thomas Gibson, of the Spanish River Paper Mills, Limited, left Toronto this week for Sault Ste. Marie, in company with other directors from New York, Philadelphia and Toronto, of the Lake Superior Corporation. The directors will inspect the company's plants and visits of inspection will also be paid on the same trip to the paper mills of the Spanish River Company.

Arrangements were completed in Toronto this week between the Toronto Typothetae and the paper jobbers of the city whereby the Long Price list will come into effect in the Toronto paper jobbing trade on or about September 1st. Commodities to be covered by the Retail List are as follows: commercial printing papers for manufacture or re-sale: envelopes in less than case lots: job lots and seconds. Lists issued by the jobber will quote a price 25 per cent above the net wholesale price. Retailers will be accorded a discount of 20 per cent from the retail price list. In brief the Long Price List acknowledges the printer as a retailer of paper.

Mr. C. E. Willis, manager in Japan for Messrs. Lendrum, Ltd., London, is on a visit to Canada, en route to England. Messrs. Lendrum are the agents in Japan for the products of the Wayagamack Pulp and Paper Company, Limited.

Mr. R. R. Bradley, consulting forest engineer and agent for timber limits, died recently in Montreal, aged 48. In early life he practised law in Ottawa, where he was born. For 15 years he was a consulting forest engineer in St. John, N.B., going to Montreal about three years ago.

090. (See this journal, xx, 481, June 8, 1922.) It consists essentially of a vertical cylindrical tank having a concave bottom with a central discharge connected with the intake of a circulating pump, and a standpipe mounted centrally on top of the tank, the discharge from the pump delivering centrally into the standpipe, the relative capacities of the various pipes being such that the stream of stock discharged from the pump impinges with the stock descending within the standpipe. -A. P. -C.

K-7 Continuous Pulp Extractor for Beaters. U. S. A. Patent 1, 414, 703, L. T. MURPHY, May 2, 1922. The stock is withdrawn from the beater by means of centrifugal force as it leaves the roll and is then passed through a rotary screen to separate the fine from the coarse stock. -A. P. -C.

K-10 Sizing Paper With Feculose. Eng. Patent 175, 034, A. A. THORNTON, assignor to FECULOSE CO. OF AMERICA, Nov. 5, 1921. Resin size is mixed with 15 to 20 per cent. (on the weight of the resin) of modified starch, e.g., feculose, previously boiled with 6 to 8 times its weight of water. Other colloids such as glue, casein, or albumin, may be used, and sodium silicate may be added if desired. The mixture, after dilution with water, is added to the beater and precipitated with alum. This composition enables good sizing effects to be obtained with about one-half the usual quantity of resin and a correspondingly small quantity of alum. -A. P. -C.

K-10 Color Effect of Rosin Size Emulsion on Finished Product. N. F. BECKER. **Paper Trade J.**, lxxiv, No. 15, 313-315, (April 13, 1922); **Paper**, xxx, No. 7, 70, 72, (April 19, 1922). Experiments carried out with the higher grades of rosin have shown that the slight improvement in color thus obtained required a very much larger amount of the paler rosin to produce the same results as are obtained from grades F, G, H; and the author suggests that this may be due to the presence of small amounts of pine oil and similar substances in the pale rosin, which oil has a tendency to coat the fibers and prevent the rosin from coming into intimate contact with these fibers. Rosin contains a few per cent. of colophenic acid, the salts of which are of a very dark brown and detrimental to the color of the size. Other factors being the same, the color of the size emulsion will vary directly according to the amount of free rosin. The color of the size emulsion also depends on the temperature of the size wax and of the water, and it is particularly important not to add cold water in the hot size emulsion. The author recommends that color standards for comparison of the color of the milk be made, using any standard white ink diluted with standard ferric chloride solution. -A. P. -C.

K-12 Expansible Cylinder Mould. U. S. Patent 1, 411, 870, R. RICHARDSON and J. F. KEY, April 4, 1922. -A. P. -C.

K-12 Technology of Paper Making Felts. JOHN STANDISH, F. C. Huyck & Sons, Albany, N. Y. **Paper Trade J.**, lxxiv, No. 11, 46-49, (March 16, 1922); **Paper**, xxx, No. 3, 7-10, 14, (March 22, 1922). A description of the manufacture of paper making felts, of the care required to obtain maximum service out of them, of the foes of felts, and of the chief causes of troubles. -A. P. -C.

K-12 Felt Guide for Pulp and Paper Machines. U. S. A. Patent 1, 414, 940, F. FORD, May 2, 1922. The device comprises a suction box in contact with the felt. The suction box is connected to a suction line which includes a water column at the bottom of which is a reciprocatable member, the position of which is controlled by the effective weight of the column due to fluctuations in pressure in the suction line. This member regulates the angular relation between the felt and a supporting roll whereby the felt is caused to creep edgewise on the roll to correct any displacement. -A. P. -C.

K-12 Means for Harmonizing the Rotations of the Couch Roll and the Breast Roll. U. S. A. Patent 1, 410, 856, F. G. WARBURTON, March 28, 1922. The patent practically covers an extension of the Harland Interlock Drive to cover driving the couch roll and the breast roll by two separate electric motors suitably regulated so as to make them run in harmony. -A. P. -C.

K-12 Recent Developments in Paper Making. T. D. NUTTALL. **Paper**, xxx, No. 6, 7-11, 16; (April 12, 1922). An outline of recent improvements in paper machine construction, such as increase in width and speed of machines, suction roll, automatic paper carriers, automatic changing of reels, paper machine drives. -A. P. -C.

K-12 The Paper Machine Hood as an Investment. H. S. TAYLOR and H. T. BAKER, Management Engineering and Development Co., Dayton, Ohio. **Pulp and Paoper**, xx, 271-273, (April 6, 1922); **Paoper Troade J.**, lxxiv, No. 13, 48-50, (March 30, 1922); **Paper**, xxx, No. 5, 12-14, (April 5, 1922). A discussion of the function of the paper machine hood in removing the moisture laden air over the dryers of the machine. Figures are given, based on actual operations in paper mills, showing that the cost of installing the hoods is not more than half the yearly saving in fuel consumption which they effect. In the case of the Briner or other economizer systems, the differential of removal with and without hoods is greater with the system than without it. -A. P. -C.

K-12 Manufacture of Sheets or Webs of Hydrated Fibrous Cellulose. Eng. Patent 173, 971, C. F. CROSS, Jan. 4, 1921. **Paper**, xxx, No. 6, 14, (April 12, 1922). Sheets or webs of fibrous cellulose which has been hydrated as described in Eng. Patent 126, 174 of May 17, 1918 (treatment with caustic soda and carbon disulphide) are made on a paper machine. The sheet is drained by treatment with a reagent capable of neutralizing the alkalinity and decomposing any xanthate present, thus causing a reversal of the hydration process. Suitable reagents are weak acids, such as acetic or sulphurous acids, or easily dissociated salts of stronger acids, such as aluminum sulphate or zinc chloride or sulphate, or sulphite waste liquor. The reagent is sprayed on to the web at a suitable point on the machine, **e.g.**, before the suction boxes or between the first and second press rolls on a Fourdrinier, or after moulding in the manufacture of moulded articles. -A. P. -C.

K-12 Method of Mounting Stone Press Rolls. U. S. A. Patent 1, 413, 436, J. W. VEDDER, April 18, 1922. Also Can. Patent 219,084, May 30, 1922. With the ordinary method of mounting of stone press rolls, if the bearings become hot the roll is liable to crack. This is overcome by mounting the stone roll on a tubular metal shaft, preferably of forged steel, the heat radiating surface of which is suficient to dissipate the heat produced at the bearings. The shaft may be water cooled. -A. P. -C.

K-12 P-1 Safety Device for Paper Winders. U. S. A. Patent. 1, 412, 994, W. E. BEADLE, assignor to NEKOOSA MOTOR AND MACHINE CO., April 18, 1922. The patent covers a device for preventing the distance between two rolls of paper, one of which is being wound and the other unwound, from falling below a fixed minimum value. As soon as this distance is reached the paper on the roll being wound is automatically torn. -A. P. -C.

K-14 Driving Device for Paper Winders. U.S.A. Patent 1, 404, 284, B. E. FOUGNER, Jan. 24, 1922. Also Can. Patent 215, 430, Jan. 31, 1922. Same as French Patent 505, 614, See **Pulp and Paper,** xix, 483, May 5, 1921. -A. P. -C.

K-14 Slitting and Roll Winding Machine. Paper, xxx, No. 8, 12, (April 26, 1922); **Paper Trade J.,** lxxiv, No. 17, 30, (April 27, 1922). Brief description of Camachine Simplex Type 40, Model BM, which has been designed especially to meet the requirements of the paper box manufacturers. -A. P. -C.

K-14 Paper Folding Machine. U. S. Patent 1, 411, 779, H. L. GLAZE assignor to PLASTOID PRODUCTS, INC., April 4, 1922. -A. P. -C.

K-14 Paper Cutting Machine. U. S. Patent 1, 413, 206, R. S. TYLER, assignor to CHANDLER AND PRICE CO., April 18, 1922. The patent covers a device for operating the knife in such a way as to prevent chattering. -A. P. -C.

K-18 The Manufacture of Jute Board. JOHN PFISTER. **Pulp and Paper,** xx, 293-294, (April 13, 1922). See this journal, xix, 199, Feb. 17, 1921. -A. P. -C.

K-18 Manufacture of Pliable Fiber Board. U. S. A. Patent 1, 406, 410, J. C. PEABODY Feb. 14, 1922. The beater furnish is treated with 3 to 15 per cent. (on the weight of dry fiber) of "cellulose in a liquid state". Dry sheets prepared from this material are soaked in a solution of sodium chloride or calcium chloride or a mixture of both until thoroughly saturated, removed from the solution, and dried. It is claimed the material thus prepared has all the characteristics of leather (soft, tough, pliable, not disintegrated by water) and is particularly suited to the manufacture of boots and shoes. It is of great tensile strength even when wet. -A. P. -C.

K-23 Means of Applying Paste to Paper. U. S. A. Patent 1, 412, 897, B. SELBY, April 18, 1922. -A. P. -C.

K-23 Method of and Apparatus for Impregnating Paper with Phenol Condensation Products. U. S. A. Patent 1, 414, 462, L. T. FREDERICK, assignor to WESTINGHOUSE ELECTRIC & MANUFACTURING CO., May 2, 1922. -A. P. -C.

K-23 Method of Connecting and Corrugating Papers. U. S. A. Patent 1, 410, 879, F. H. BITHER, assignor to AMERICAN BOX BOARD CO., March 28, 1922. Narrow strips of paper (trimmings from rolls, etc.) are overlapped and passed between corrugating rolls, which are set very close together (at most one thickness of paper apart), so that the overlapping strips are subjected to enormous pressure practically crushing the two thicknesses of paper to the thickness of one. At the same time the rollers are heated to 250° F. or more. -A. P. -C.

K-23 Paper Creping Machine. U. S. Patent 1,411,656, W. W. COLLEY, April 4, 1922. Creping rollers, having respectively a smooth and rigid and a relatively soft and resilient surface, are operated in combination with an "obstructor" constituted by a straight-edged flat blade so mounted as to present its edge between the surfaces of the creping rolls at or near their line of bite. The paper is drawn forward by contact with the surface of the rigid roller and carried at such a rate between the edge of the obstructor blade and soft roller that the paper, owing to its advance being momentarily checked at short intervals, is alternately crowded-up and allowed to pass the edge of the obstructor. Means are provided for impressing the paper with transverse lines of weakness or for dividing it longitudinally, or both. -A .P. -C.

K-23 The Manufacture of Carbon Paper Stock. ERIOGERG. **Papeterie,** xliv, 109-110, (Feb. 10, 1922). Brief practical notes on the raw materials, cooking, washing, breaking, bleaching, beating, and handling on the paper machine. -A. P. -C.

K-0 Method of and Apparatus for Manufacturing Sheets of Plastic and Fibrous Material. U. S. Patent 1, 411, 330, J. P. ELLIOTT, April 4, 1922. Addition to U. S. Patent 1, 352, 796, Sept. 14, 1920. The first patent covered the process of making sheets of fibrous material and a material which becomes a binder on heating by first manufacturing sheets of the fibrous and the other material and then uniting several such sheets by heat and pressure. In passing the sheets through the squeeze rolls, there is always more or less of a tendency of the material to pile up in advance of the rolls. The difficulties resulting from this are overcome in the present patent by constructing at least one squeeze roll of each set so that its working surface is interrupted at one or more places, thus releasing the grip on the work at intervals. The interruptions are made to occur in different angular positions in the series of sets of rolls, or the sets are so spaced from each other that any ridges formed across the sheets due to piling up of the material in advance of one set will be flattened by the next set. -A. P. -C.

K-0 M-7 The Use of Air in the Paper Industry. J. O. ROSS, Ross Engineering Corporation, New York. **Paper Trade J.,** lxxiv, No. 12, 41-49, (March 23, 1922); **Paper,** xxx, Nos. 4, 5, 7, (March 29, April 5 and 19, 1922). Brief discussion of the general principles of air engineering (defined as "the science of changing the conditions of the atmosphere"), together with an outline of its various applications in the pulp and paper industry (wood room, beater room, rag room, wet machine room, paper machine room, coating mill, gummed paper mills, etc.). A. P. -C.

L. — Articles Produced from Pulp and Paper

L-4 Reenforced Box Blank Material and Method of Manufacturing It. U. S. Patent 1, 410, 662, GEO. W. SWIFT, JR., March 28, 1922. Also Can. Patent 218, 213, May 2, 1922. The material is built up of several plies of paper, and one or both of the outer (or surfacing) sheets is folded by passing through suitable blade folders arranged to form two parallel spaced folds or pleats just prior to being brought into contact with the filling web. -A. P. -C.

L-4 Machine for Making Paper Receptacles. U. S. Patent 1, 411, 338, W. FUHR assignor to WESTERN PAPER BOX CO., April 4, 1922. -A. P. -C.

L-4 Cardboard Can. Can. Patent 215, 340, H. G. THOMSON, Jan. 24, 1922. -A. P. -C.

L-4 Cardboard Box Making Machine. Can. Patent 214, 685, W. C. RITCHIE & CO., assignee of M. J. MILMOE, Dec. 13, 1921. -A. P. -C.

L-4 Paper Cup Forming Machine. Can. Patent 214, 401, W. W. BEVAN and C. E. CLARKE, Nov. 29, 1921. -A. P. -C.

L-4 Machine for the Manufacture of Foldable Paper or Cardboard Boxes. Fr. Patent 532, 558, M. CHAMBON, **Papeterie,** xliv, 261-262, (March 25, 1922). -A. P. -C.

L-4 Waterproof Fibrous Tubes. U. S. A. Patent 1, ent 1, 396, 060, G. A. RICHTER et al., Nov. 8, 1921. Fibrous materials impregnated with sulphur are further impregnated with a water-repellent compound, which is solid at ordinary temperatures, e.g., bitumen. -A. P. -C.

British Trade News

(From Our London Correspondent)

London, Aug. 9 1922.

The strike amongst the Provincial newspapers is drawing to a close. Unfortunately the crisis is not over yet and it will be fully another three weeks before the newspapers get into working order again. In some parts of the country the men have returned to work on their own account. The fact, however, remains that sellers of newsprint have been badly hit by the strike.

Information has reached London that Messrs. Richardson's paper mill at Jarrow has been closed down indefinitely. This means a large number of employees being thrown idle.

Newfoundland's Scheme

In the Imperial House of Commons this week, Mr. Tickler asked the Premier (Mr. Lloyd George), if he was aware that an influential body of men was about to visit London to place before him a proposal regarding a paper enterprise on the west coast of Newfoundland; and seeing that the object of the visit was to secure a Government subsidy in the form of a guarantee of half the principal and interest on $18,000,000 required to finance the scheme, would he assure the House that this subsidy would not be granted before taking the views of members of the House on such an enterprise?

The answer was given in writing. It stated: "I understand that an application has been made to the Trades Facilities Act Advisory Committee for a guarantee in respect of £2,000,000, being part of a loan of $18,000,000 for the enterprise in question. In accordance with the pledge which I have given on several occasions, I do not propose to interfere in the Committee's consideration of the application."

Wise man! Under the Trades Facilities Act grants have been made for British enterprise in the building of new mills, but it is questionable if Newfoundland comes under the Act. However, there is a way out of all difficulties and a British firm can make the application. Nothing is yet known publicly as to the name of the applicants. This will come out later. (Messrs. Armstrong-Whitworth are mentioned. — Ed.)

Becker's Profit

Messrs. Becker & Co's 14 th general meeting was held the other day, Sir Frederick Becker presiding, and the gross profit for the past year was announced as £59,967. After deducting certain charges and fees £24,256 was left and the balance of £19,256 added to the amount brought forward from last account, gave a total balance of £35,794. A dividend of 10 p.c., free of tax, was paid on July 1, making 15 p.c. for the year.

Sir Fred Becker mentioned that the firm was about to amalgamate with the Preston Steam Navigation Company. The two companies for some years have been run together from the same office and by the same officials. They would retain the Preston Steam Navigation Company as a company to act as a buffer state between the ship brokers.

Sir Fred Becker dealt with the unparalleled depression the paper trade in Great Britain had passed through, but although these causes have been from one month to another dealt with and enlarged upon, in the "Pulp and Paper Magazine", they will be worth quoting again, coming, as they do, from one who knows what he is talking about. "The causes are many", he said, "and one thing was sure and certain and that was; the Government had allowed the paper business to be brought very near destruction. Other countries took such steps as thwarted dumping, collapsed exchanges and foreign domination abroad. By this action they benefited so much that the turnover on the whole had been quite exceptionally high. Take England, France, and U. S. A., it was nearly four millions. It was a very pleasant thing to say, whereas trade in England had been affected, in France, Italy and Spain, it had increased in U.S.A., it had not decreased and with regard to our own overseas trade they had gone from 2,000 tons shipped in 1919 to 22,919 shipped last year. This was a record for tonnage and turnover."

Sir Frederick summed up present day conditions by stating that the newsprint trade was busy, the esparto trade was looking up, and with the resumption of exports and a return to a better state of trade, he considered the other branches of the paper industry would also be restored.

Extraordinary Contracts

Turning to his last visit to America — during which he crossed into Canada — Sir Frederick said he had concluded certain business transactions which had been in the making for some time. Those were the most extraordinary contracts closed in the history of wood pulp business. The firm had bought and sold to a large number of customers one million tons of groundwood and 600,000 tons of sulphite. They were entered into on a basis which was very equitable to the manufacturer and to the buyer, and, so far as Becker Co., Ltd. were concerned, was grateful and comforting, because they had earned £43,000 a year for the next ten years without having anything more to do for it, except, of course, that they had got to keep things in order.

The shareholders could pride themselves on this. It was those great Canadian negotiations which had freed the newspapers and publishers and had set free the larger body of consumers of paper — the wrapping paper people — from the domination of Scandinavian Associations of Manufacturers, letting them know where they got off during the war. They could hardly be blamed for doing that again unless they did something to protect themselves; and those contracts were the answer. French, British, and American buyers had come together to take up this enormous quantity of pulp and Messrs. Becker Co. Ltd., were comfortable for the next 10 years.

The capital of the company was increased, by resolution, to £500,000 by the creation of additional £1 ordinary shares.

The amalgamation with the Preston Steam Navigation Company was also approved.

Pulp from Canada

Large quantities of Groundwood and Sulphite have reached England from Chicoutimi and Port Alfred. The groundwood shipments total 12,619 tons.

Prices of pulp in England remain unchanged.

Other Companies

Wall paper Manufacturers Ltd. declared dividend, payable on Sept. 16 next, at the rate of 5 p.c. The Colthrop Board and Paper Mill announced a profit of £539 for the year May 31 last.

Australia Again

According to the news that has reached London the preference given British newsprint is not working out to the satisfaction of the Australians. British sellers will have to modify their prices. The great point, after all, in Astralian is the studying of domestic conditions and watching the shipping rates.

Note: We are advised by the Imperial Paper Mills of an error in the Pulp and Paper Magazine in regard to amount of pulp received from Canada. The amount was less than 500 tons.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, August 22. — Labor troubles, threatened and actual, in the United States and Canada, have affected some sections of the paper trade. The industrial disturbances have resulted in considerably larger orders being placed with the mills, with the object of securing prompt delivery of the goods, thus providing against the effects of serious trouble. The upset in the mining districts is restricting the coal supplies to the mills, although so far production has not been materiall lessened.

Locally, the trade is about the same. Business is slack, with the jobbers inclined to order more freely, partly on account of a desire to get prompt shipments.

While the newsprint situation has not undergone any change, the rise in the price of paper stocks has caused renewed discussion as to the probable course of prices for newsprint. According to one financial writer—Everyone admits that the mills will most certainly advance their contract price to $75 per ton for the first quarter of 1923, and there is a large and growing faction which holds to the opinion that an increase of $10 in the price will more probably be made and that the Canadian export price for the first quarter of next year will be $80."

"Everyone" in this instance means certain stock-brokers who would lead us to believe that they know more about the industry than the men who are at the head of the companies. There is no certainty as to an increase—it may or may not materialise: that has to be decided in the future, according to the conditions. The widespread prophecies as to an advance has resulted in the issue of a special bulletin by the American Newspaper Publishers' Association. Naturally the association desires to prevent any possible increase, and the members are therefore urged to curtail the consumption of newsprint; otherwise it is feared there will be "a further hardening of the market." That is one point of view. Another is that an increase in price may result in decreased consumption—and very seriously affect the output of the mills. There is always that danger, which is appreciated by Canadian mills, who are very anxious to obtain sufficient orders to keep the plants running somewhere near capacity. The conditions may change in a very short time, and materially influence the price policy.

The demand for boards continues very strong, the mills working at capacity. There is no special reason for this revival, except that general business has improved.

The pulp market is better. The buying of bleached sulphite is as good as ever, while ground wood is now coming into its own. The demand has picked up, and prices are higher at from $27 to $30. Moreover the prospects are brighter than at any period this year.

Considerably more pulpwood will be cut this year, judging from the calls for business. The employment agencies report that there are more jobs than there are men, especially for Ontario camps. Wages range from $30 to $35 per month, with board. This is slightly higher than last season.

Toronto Topics

There is still a summer dulness in the paper trade in Toronto and Ontario but it is mostly evident in the jobbing end of the business. The printing trade in Toronto has seldom been as quiet as it is at the present time and the big plants are feeling it keenly. On the other hand, the smaller printing plants, with light overhead, are considering themselves in a rather fortunate position and say they are picking up quite a lot of odds and ends of business. While the slack condition of the printing trade has reflected itself in a falling off in orders from the paper jobbers, representatives in Toronto of the big paper companies say that the manufacturing end of the paper trade is keeping up well. Most of the mills are running at a fair proportion of their capacity and some are running full. The Provincial Paper Mills, for instance, are operating at full capacity and have considerable orders for book papers ahead. Despite the dulness in the wholesale end of the trade the pulp and paper market is generally considered to be in a fairly strong position, with a prospect of a return to normal conditions in the near future. In some quarters it is held that the mild tone of the Riddell-Latchford report has gone far towards reassuring pulp financiers, whose support has always been a strong factor in harvesting and manufacturing pulpwood. With the return of support, pulp operators feel confident in undertaking and resuming extensive operations. According to officials of the Lands and Forests Department of the Ontario Government, a record cut of pulpwood and timber is expected in Northern Ontario this autumn and the general indications are that there will be a big revival of the pulp industry soon, after a period of considerable uncertainty.

Pulp — The market for the various grades of pulp is fairly steady with a ready sale in some lines and others somewhat quiet. Groundwood is still quoted at from $30 to $40, delivered, with news grade sulphite at $60 and book grade at $65 delivered. Sulphate is still being bought on a basis of $70 and is in fair demand from the mills.

Newsprint — The newsprint market is perhaps the most active of any of the paper lines, with carload rolls quoted at $3.50 and flats at 4½ cents in two ton lots to the publishers. Generally speaking newsprint is scarce, according to Toronto representatives of the mills, and future prices will depend to a considerable extent on the outcome of the coal strike and railway strike situations. The further increase of five dollars a ton by the International Paper Company on new newsprint business is being discussed with interest in Canadian newsprint circles and whether or not the Canadian price will reach the same level as the American at the end of the present quarter is a matter for speculation. An official of one of the big newsprint mills significantly remarked to the Canadian Pulp and Paper Magazine that it could be depended upon that the price would certainly not go lower, which may be taken as an indication that increases in the Canadian market may be looked for when the matter of new prices comes up toward the end of the year. The present Canadian contract price for newsprint is $70 and the price of the largest U. S. product, with its recent increase, is $80.

Book papers. — Coated paper mills in Ontario are fairly busy and a fair demand is reported. No. 3 coated to the jobbers is quoted at 13 cents and No. 2 at 14 cents f.o.b. the mill, uncrated. A drop of a cent a pound on ordniary book went into effect a few days ago. No. 3 book is now quoted at 7½ cents; No. 2 at 8 cents; No. 1 at 8½ cents, f.o.b. mill, uncrated. In the jobbing trade there has been a slight picking up in books, writings and bonds, and in some other lines, due to some extent to business created through the big National Exhibition that is about to take place in Toronto.

Bonds and writings — There has been a tendency to reductions in cheap writings but bonds show an upward tendency, particularly in the United States, although the Canadian market has not been affected as yet. On the whole bonds and writing papers are showing a strong tendency and a fair volume of business is being done in these lines. Present prices will probably hold for some time to come.

Wrappings and bags. — The present month has been a rather quiet one in this department, although July showed up well. There is no difficulty in getting all the supplies necessary from the mills. No. 1 kraft, M. F. is quoted at $8.15 and colored sulphite at $8.00. Other quotations are as follows: colored kraft, 8¾ to 10¾; B. Manila, $5.50; No. 1 Manila, $6.75. The changes in paper bag prices are as follows: Light Manila 62½, 7½, 5 per cent off 100 M lots: light kraft 60 p.c., 7½ p.c., off 100 M lots.

Tissues and Toilets. Mills report a fair amount of manufacturing activity with prices holding firm and unchanged. The demand from the jobbing trade and from consumers for most lines keeps up well and a fair amount of business is passing in most lines of light weight papers.

Paper boxes. — The paper box trade in Toronto is keeping up well. Most of the plants are running close to capacity and folding and set-up box makers report a good volume of trade. Many new novelty lines are being put out for the confectionery and other trades and the industry generally is absorbing a considerable quantity of board.

Rag and Paper stock. — A features of the week in this department is the demand that has sprung up for all grades of new cotton cuttings, particularly No. 1 white shirt cuttings, while there is a fair demand for most other lines in both rag and paper stocks. No. 1 hard white shavings are quoted at $3.75: No. 1 soft white shavings, $3.35; heavy books and magazines, $1.95; ledgers and writings $2.20; No. 1 kraft, $2.25; newspapers, 80 cents; No. 1 mixed papers, 70 cents; No. 1 miscellaneous, 65 cents; No. 2, misc. 60 cents; No. 1 white shirt cuttings 11 to 11½; fancy short cuttings, 5½: cotton flannels, bleached, 8½; blue overall cuttings, 5½. There have been some price recessions in ropes and bagging with the following quotations prevailing: No. 1 scrap bagging, $18.00; No. 1 manila rope, $6; mixed strings, $18.00.

Twine. — Manufacturers report the twine market as firm, with orders coming in fairly freely and prices as low as they are likely to go for some time. Jute twine is in good demand and the mills in the Ontario district are running fairly full.

Stationery. — Manufacturing stationers report a fair volume of business and a good demand for most lines of blank books, scribblers, school books and general sundries. General conditions in the trade are reported by manufacturers to be improving and a good Fall business is being anticipated.

NEW YORK MARKETS

New York, August 19 — (Special Correspondence) — The second increase in the price of newsprint, together with the ending of the soft coal miners' strike, seem to have instilled new life into the paper industry. The market this week has ruled very firm in tone, and business of expanding volume has been reported. Not in a long time has the industry in the States been characterized by so much activity; mills are running at a good pace, many having quickened their operations since the coal strike was settled, and with everything appearing in favor of an even livelier and healthier market.

The settling of the coal strike is a most important event for the paper industry. Fuel stocks at numerous mills had been reduced to a point where it became necessary for manufacturers to curtail operations, in a few cases to close down, and the shortage of coal was materially hampering the industry in its efforts to get back to normal.

The higher prices on newsprint have had a tendency to strengthen quotations on all other kinds of paper. Paper manufacturers have learned that higher prices at this time do not affect the demand from consumers as many presumed they would, and there is consequently a tendency to name higher quotations. This is fully justified both by the demand prevailing and by the present cost of manufacture. It is no secret that many paper mills have been marketing their product for some time past at a loss to themselves, simply because they desired to keep running and to hold their trade, and now that it has been seen that an advance in prices will not diminish buying by consumers but will, judging from the newsprint situation, stimulate demand, manufacturers are commencing to adopt a different attitude in respect to quotations. There is another factor—and a very important one—entering the situation also. Raw materials are jumping in price at a rapid rate. Waste paper is advancing at a pace not witnessed in many a day, and prices on this commodity have climbed to levels which compare favorably with the high points reached during the after-the-war boom. Rag stock also is advancing in cost, while wood pulp shows a rising trend. Under the circumstances it is not surprising to see paper prices display a stiffening tendency, nor to witness manufacturers refusing orders for their product at prices which represent concessions from generally recognized market levels.

Newsprint is strong and is moving actively. Mills producing print paper are running at close to capacity and are reported finding a ready outlet for all the paper they are turning out. One only has to look at the daily newspapers in any part of the country to find the reason for the steady and heavy demand for newsprint. Papers in New York are printing larger issues than in many summers in the past, while travelers through the country say that publishers in the Middle West are printing proportionately larger papers than are those in the East. Moreover, circulation is growing, which means additional paper consumption.

The box board market is exceedingly firm and active. Board mills in quite a few cases were obliged to shut down for a time during the coal strike, and this loss of production was just sufficient to make for a temporary shortage of board. The result is that paper box manufacturers are actively seeking board and are paying premiums to cover their wants. Plain chip board is selling in New York City at $50 a ton, and news board at $52.50; even higher prices having been reported received in some instances.

Book papers are working into a stronger market position. Demand for this class of paper is on the rise, and as mills obtain more business they become firmer in their demands for full quoted prices. It is not nearly so easy to place orders for book paper at the quotations recently prevailing, and jobbers say that some manufacturers are asking advanced prices.

Fine papers are moving in a consistent way and in comparatively good volume for this time of the year. Wrappings are fairly active, as are tissues.

Ground Wood. — Mechanical pulp is steady in price, and reports generally tell of fair trade activity. Consumers are said to be absorbing pulp in good tonnage for this time of the year; it is stated by most members of the trade that the movement into consuming channels is a good deal above an average for this season, and there is every prospect of a continuance of the steady demand for some time to come. Newsprint mills and board manufacturers are the leading buyers at present; of course, this is invariably so, but these consumers appear to be purchasing proportionately more ground wood than other users. Prices hold at around $31 to $32 a ton at domestic grinding plants, with the delivered basis ranging from $35 to $38 a ton, depending on the distance the pulp has to be hauled.

CHEMICAL PULP — All kinds of chemical wood pulp are favored with a good demand, and there is a firm tone to prices. In fact, quotations exhibit a distinct tendency to stiffen. Importers report primary markets in Europe as evincing an upward trend, and say it is necessary for them to secure higher prices from paper manufacturers in this country in order to import pulp at a profit. Domestic producers are gradually disposing of pulp until they are fairly well sold up for several months to come, all of which inclines to strengthen pulp values.

Bleached sulphite is especially firm, and domestic No. 1 bleached is freely selling at around 4.25 cents a pound at pulp mills, and No. 1 foreign bleached sulphite at about 4 cents ex dock New York. Kraft pulp is firmer than in some time, with importers quoting Scandinavian kraft at from 2.50 cents upward, and with domestic No. 1 kraft held at from 2.75 cents to 3 cents a pound.

RAGS.—Roofing rags are in brisk demand and again higher in price. Activity in this class of stock is the feature of the papermaking rag market, and is serving to stimulate demand for other grades. Sales of No. 1 roofing rags have been reported at 1.35 cents a pound f.o.b. New York, and of No. 2 packing at 1.25 cents, while foreign dark cottons have sold to felt paper mills at about 1.30 cents on the dock at New York, all of these prices representing advances. Dealers put much stress on the difficulty they are experiencing in locating normal amounts of roofing rags, asserting that an actual shortage exists, and are using this argument in asking higher prices.

New cuttings are firm and advancing. No. 1 white shirt cuttings are quoted at a minimum of 11.50 cents a pound at dealers' shipping points, with most sellers wanting a quarter of a cent more, while unbleached muslins are held at 10.25 cents, white lawns at 10 cents, light silesias at 6.75 cents, and No. 1 washables at 4 cents. Old whites are steady at from 6 cents a pound upward, depending on the quality of packing, for No. 1 repacked stock.

PAPER STOCK — What could be accurately described as a boom exists in the waste paper trade. Demand for some grades of old paper is very active, and prices have risen with such rapidity this week that it is questionable just what prices really constitute market levels at the moment. Old magazines have sold at 2.20 cents f.o.b. New York, and there is not much supply now available at this basis. Soft white shavings of No. 1 grade have brought 3.65 cents per pound, old No. 1 kraft paper 2.10 cents, white news cuttings 1.90 cents, and ledger stock 2.25 cents. Low grades have advanced in even greater proportion than have the better qualities. Folded newspapers have sold at 1.05 cents a pound at dealers' shipping points, and No. 1 mixed paper at a cent per pound. Container manilas have fetched 1.20 cents, and box board cuttings 1.10 cents. How much further prices will go is at present problematical; it is plain to be seen, however, that consumers, board mills in particular, are anxious for supplies and are granting stiff prices.

OLD ROPE AND BAGGING — There is no pronounced change in old rope. Sales are being made to paper mills at between 5.75 and 6 cents a pound for No. 1 domestic manila rope, while mixed strings are bringing around 85 cents a hundred pounds.

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WOOD PULP

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MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

With the Woodsmen

THE PAST AND FUTURE DEVELOPMENT OF FORESTRY

If you gentlemen were living in the time of Marshall, perhaps America's greatest jurist, you would have been under a cloud had you lived in the forest. The rich agricultural valleys along the rivers contained the industrial elite. The poorer and the most ignorant members of the population were pushed into the backwoods. To be termed a "forest dweller" carried a stigma. Contrast this with the situation that exists today in France after three or four centuries of forest development. The nobility whose financial power is based on political service or industrial success live in their châteaux, surrounded by forests. To be known as an owner of forest estates carries social prestige. This contrast merely marks the evolution which is taking place in our forest resources all over the civilized world. The older the United States grows as a nation and the more powerful we become, the greater will be the intrinsic value and prestige of our forests and those who administer them.

No one who served during the great war and rubbed up against the men of other nations could fail to realize our present industrial power. This power to my mind does not come solely from inherent qualities in our population— it unquestionably is due rather to our great wealth in natural resources, and timber of course is one of the most important of these. It is therefore wise to recognize that our economic power is based on the raw products which we are frantically destroying and selling to other nations. To maintain our power, we must insist that this natural wealth be used wisely.

Past forest history is interesting and instructive but we must not overlook the fact that future forest history, with which many of you will be intimately concerned, is more interesting and of more importance. During the past two decades we have seen our efforts concentrated on forest propaganda and this propaganda can, by no means, be said to have been entirely successful. It must be continued. If you ask a hundred citizens (selected at random in New York City) what forestry means, probably not five of them can give a reasonably correct answer. Our educational system has been well developed but can be improved. The organization of state services has succeeded in most forest states but is not yet, with some exceptions, on a sufficiently high plane of efficiency. We have seen the gradual organization and administration of our public forests. We have spent considerable sums of money on studies of American trees, forest regions and on sources of timber supply. We have studied, and are studying, waste in the woods and what is more important, the proper utilization and wise use of the raw product, after it is cut. I want to say how much I admire the foresight of your Dean in emphasizing the importance of the study of forest product industries. It would be foolish to concentrate solely on the future production of trees and be blind to the necessity of economy in the use of what is already supplied by our virgin forests. The classification of forest and agricultural land was a proper preliminary to the forest management ahead.

Today we are approaching the dawn of forest working plans on public forests, but generally speaking there is not very much forestry being practised today on state or private land in the United States. Now during the next two decades,—and I might say it is easy to prophesy because by the time you are shown to be wrong it will probably be forgotten,—during the next two decades, I say, we are going to see state and national forest administration systematized. We are going to see forest fire protection probably the best in the world, unquestionably the best in the world. We are going to see land classification well advanced and a concentration of effort in the study of conditions that affect the regrowth of timber. We are going to see the question of forest devastation solved and unquestionably it will be through co-operation between the owner and federal or state authorities. And perhaps the solution of this great problem of forest devastation is going to be an association of timber owners under proper technical advice and perhaps under some sort of federal or state control. In other words, in order to succeed the mandatory principle alone won't do; we have got to have really first-class co-operation between the official authorities and the forest owner.

Now we are approaching a shortage of wood or timber, specially along certain lines—the valuable species. We shall, therefore, see a further and very detailed study of the uses of wood. Probably the problem of waste will have been solved, but with this timber shortage we are going to do exactly what other great empires did in past centuries—we are going to develop beyond our borders, and I confidently predict that for such species as ash, oak, yellow poplar, and hickory, we are going to find satisfactory and cheap substitutes in, for example, Brazil. From the technical standpoint there is going to be an exceedingly interesting development and that is this—probably in the tropics we are going to see commercial timber produced successfully and in a half to a quarter of the time necessary for rotations in this country. This will be of great fundamental and commercial importance.

Now as we look ahead not two decades (because forestry does not cover a few years; it is a question of hundreds of years), if we look ahead, say, to the period of 1941 to 1960, this is what we shall find—we shall find an intensification of studies in natural regeneration and also artificial reforestation. We have seen it in other countries; we have seen that with the pressure for wood products and high stumpage prices, it is the natural thing to repair the waste that has been done. With an inadequate supply which is certain to come, we are going to have substitutes, but we must have a further development of all the sources of supply.

Then, too, (and this I feel certain of), the forest schools are going to devote much more time to purely technical subjects. By that time our private, as well as our public forests, will have been organized for permanent production. They will be considered investments,—permanent investments,—and therefore the forest schools are going to devote more time to the study of rotation, yield, and to extremely technical financial calculations—all assumed in working plans. You will note I put this in the future because that sort of thing comes gradually and must come with the natural development of intensive forestry.

I recall the story of Velasquez, the great Spanish painter who had just finished a portrait of himself. He invited King Philip to see the picture. Like many great painters, Velasquez was arrogant and did not brook criticism; he thought he was right and the other man wrong; so he confidently turned to his beautiful portrait and said to the king, "What do you think of it?" "I do not like it at all, it is incomplete", answered the king. Velasquez curtly dipped a brush in red paint and handed it to the king. "If you do not like it, improve it." So King Philip dipped again in the pot of red paint

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* Address by T. S. Woolsey, Jr., before New York State College of Forestry Syracuse, New York, April 20, 1922.

and very carefully drew a little insignia on the left breast of the portrait, thereby knighting Velasquez and showing that he approved of his work, now completed.

Now in forestry we are not going to get recognition as quickly as that. What you men do will be judged fifty to sixty years hence. Therefore, while you must not minimize the practical means of earning a living and selling yourselves for what you are worth, yet to be a successful forester, a great forester such as some of you will be, you have got to be something of an idealist and look ahead. Even though you are mistaken as to detail you have got to picture what is coming and you must be enough of a thinker to fathom the national needs of the future.

T. A. P. P. I. AND WOODSMEN CUT WASTE

The Technical Association of the Paper Industry has asked the cooperation of the Woodlands Section in its study of waste, particularly as related to the production and storage of pulpwood. The manufacture of paper starts in the woods, where questions of expediency as regards operating costs, volume production and the protection and reforestation of cut-over lands, govern the cutting limits. In the past, in both the lumber and paper industries, quantities of material have been left in the woods, which now appears to have a marketable value. The utilization of stumps, the top diameter limit, brush disposal—all these bear directly on the cost of pulpwood production and the productive capacity of pulpwood lands.

The size of the pulpwood unit, whether 4, 8, 12, 16 or other foot lengths, has much to do with the costs and efficiency of cutting, driving, and rail transportation. Even after the wood has been piled in the mill yards, comes the question of loss through the decay and destruction by fungi and wood boring insects. This whole question of avoidable loss in the basic raw material of the paper industry is one which must receive careful consideration and the Woodlands Section is glad to offer its cooperation to the Technical Association in their studies along these lines.

VERSATILITY

The prize winners in a masquerade dance at Big Bay Point Lake Simcoe, were an oddly assorted couple, claiming with some success, the judges thought, to be Huckleberry Finn and an Italian organ grinder. There was at first some curiosity as to their identity, until it was noted that all running parts, gears &c of what purported to be an organ of the Lizzie, or cranking type, were housed in and guarded, and that the mouth organ, used to supplement the lack of groan from the groan box was supplied with filtered air. This gave the game away after finding that the organist was our friend Mr. A. P. Costigane, it was long before the identity of Huck Finn was established as Mrs. Costigane. Last year Mr. Costigane carried off the prize as Harry Lauder.

D. Branch, Toronto manager for the Canadian Barking Drum Company, has just returned from a trip through Northern Ontario where he visited most of the pulp and paper mills. The company has contracts to supply two drums to the Thunder Bay Pulp and Paper Company, Port Arthur, and one drum to the Howard Smith Paper Company's Gaspé limits. The Chicago office recently received orders for drums to be supplied to the New York and Pennsylvania Company, Johnsonburg, Penn.; the West Virginia Pulp and Paper Co. and the Thilmany Pulp and Paper Co. at Kaukauna, Wis.

BRADLEY C. BAUTER

The *Pulp and Paper Magazine* regrets to learn of the death of Mr. Bradley C. Bauter at Grand'Mere on August 14. Everything possible was done to aid his fight for life and Dr. F.A.C. Scringer, a specialist, was called in to perform an operation, but all to no avail.

Mr. Bauter was born in Laforgeville, N. Y. on October 29th, 1870. He was graduated from Watertown High School and then learned the trade of machinist with the Watertown Steam Engine Company. He was employed a number of years with the Bagley & Sewall Company, paper machine builders of Watertown and subsequently with the New York Air Brake Company of Watertown. For the last fifteen years he was with the Laurentide Company in various capacities in the Repair and Maintenance Department and for some time has been Superintendent of this department. He was very popular with his men and universally well liked. He was a member of the Watertown Royal Arcanum Lodge; Exempt Firemen's Association of Watertown; Jefferson Union Lodge No. 124 Independent Order of Oddfellows, Watertown, N. Y; Watertown Lodge No. 49 A. F. & A. M., also Watertown Chapter and commandery and Media Temple of Mystic Shrine. He leaves a wife, Nellie, of Grand'Mere and a number of relatives in New York State.

A short funeral service was held in Grand'Mere and interment took place on August 17th, at Watertown, N. Y. under the auspices of Watertown Commandery, Knights Templar.

Grand'Mere has lost a highly esteemed citizen and the Laurentide Company one of its most valued employees.

Mr W. J. Gorman, Montreal representative of the Provincial Paper Mills, is in Scotland seeking health. We are happy to be informed that his quest has been quite successful and he is expected home about the middle of September.

B. F. Perkins and Son, Holyoke, Mass., have issued a new bulletin, No. 10, on Fans. Special attention is given equipment for ventilating paper mills. Copies of this bulletin will be sent on request.

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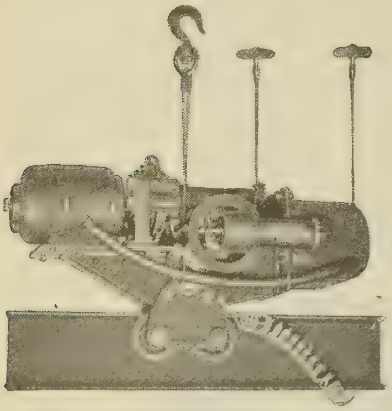

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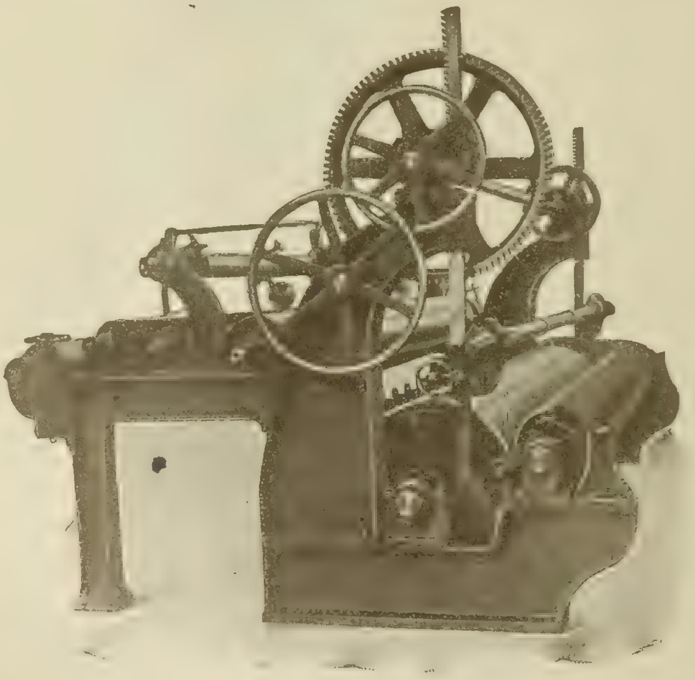

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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:-: EDITORIAL :-:

THE MAN WHO WINS

Some men are satisfied with making a living; others want to make "their mark." Some are content with a steady job; most people hope for a better job. With the exception of a few unusual cases, the better man gets the better job. "May the best man win" is as common an attitude in business and industry as it is in sport. No one would place much of a wager on a pugilist, wrestler or runner who refused to train himself for the event in which he was to participate. It is expected, also, that the backers of the athlete will insist on his training carefully and consistently. The captain and manager of a baseball team keep the players at regular practice; and they keep recruits and second string players in training to fill the inevitable emergencies in the regular line-up. There is an occasional star whose make-up refuses to obey the rules that bring success 99 p.c. of the time. The phenomenon goes his own way, plays his own part, and may pull his team out of a hole or even be its mainstay. But the consistent performers who seek constantly to improve their game are *the team.*

It is team work that counts, and the better trained the team, the greater the returns. As Jim McIntyre, the famous comedian, once said, "If you work with other people, you've got to understand one thing. The better the other fellow does, the better it is for you."

Employers are coming more and more to realize that industry succeeds by team work and to appreciate the advantage of a properly trained team. They know that the better the other fellows do, the better it is for them. This applies, not merely to the physical results the other fellow gets, but his wages as well. For wages are usually, and should always be, an accurate measure of results. It is easy to demonstrate and sometimes possible to convince the employer that it is worth his while to encourage and maybe assist his employees to obtain the training that will make for progress to the man and production to the concern.

There are still some managers who think that the brains of industry should be concentrated in the office and the brawn at the bench. They are likely to have many accidents, a high labor turnover, low production, high costs, and discontented workmen. Others value the trained workman, but want someone else to train him.

The progressive concern believes in having a management highly trained in the technology of production and the science of business, and in having the personnel of the plant thoroughly informed of the principles and practice of the processes of production. The training of the workman must combine knowledge and skill. The wise workman knows that it is his skill which holds him his job, but his knowledge beyond that limited sphere which makes promotion probable.

Mr. L. F. Loree, president of the Delaware and Hudson RR., is quoted in a biographical sketch as saying: "Anyone can earn his daily bread by working eight hours a day. The use one makes of his spare time is what counts! I have never yet known a man to win to the heights without spending in study and self improvement most of the spare time that the average man squanders." He ought to know, having worked his way to the top by a determination to master the details of his work and improve it. This meant constant study, inexhaustible energy, and willingness to work.

Not every man can, or wants to be, the president of his concern, but every man can be a better man next year than he is now, and this usually means the opportunity to fill a bigger job. Every man can know more about his job and his business. Someone recently wrote, "The best informed man is the best equipped man for progress and promotion." There is no doubt about it. Let any man put himself in the place of his boss and consider who is the man best qualified for promotion. He knows well enough that the man who will make good is the man who has invested a lot of his spare time in a knowledge of the business and in studying his job. He also knows that the man who is promoted through favoritism rather than fitness will not usually command respect or really make good. Then why should anyone expect promotion, except on merit?

The very fact that a man is investing a lot of time and a little money is a very good indication that he is made of the stuff that makes good. The history of industry shows, as Mr. Loree has said, that the man who wins is he who improves himself. The effort to do this involves careful reading and diligent study. Most of the men at the head of things today had to hunt for helpful books. Industry was not organized then to help the workman to a higher and better position, nor has any industry done more than—we think none has done as much as—the pulp and paper industry in this direction. Where the leaders of today had one or two books of a general character to study, the leaders of tomorrow are provided with a series of texts especially prepared by selected authors of the highest qualifications. The man who is to be a foreman, superintendent, or manager may take these and read them or he may study them diligently under expert direction. For the Canadian Pulp and Paper Association has not only contributed generously to the preparation of the texts, but has recognized the advantage of having them properly studied; to this end a special committee is cooperating with the Institute of Industrial and Domestic Arts (Gardenvale, P.Q.) in organizing their Department of Pulp and Paper Making, established to use the text books under authority of the Association. This connection assures the most efficient expenditure of effort in self improvement. Individual study is given somewhat the atmosphere of the class room, without the usual distractions. The student is encouraged and guided. There is no waste of effort or time.

Men who have been disappointed in having to interrupt their education can now continue, and in many respects do so more efficiently than if they had not gone to work so soon. They can study practically any subject in a high school course or a college curriculum. The subjects fundamental to the regular operations in the paper or pulp mill are included in the text books of the industry and the correspondence courses of the Institute. The main thing, however, is to awaken and arouse in the man the enthusiasm for study and progress. If he wants advancement enough to do something more than wish for it, he will get it, in some measure.

Now is the time to start. Many boys must quit school. Some quit last year. Some quit years ago. Among these are many who have the faculty for leadership and should be preparing themselves for the opportunity. The industry needs these leaders and requires that they be properly trained—and kept in training. Study and constructive thinking will do it. Begin now.

KEEP THE LOAN IN CANADA

The Minister of Finance has pointed out that, in offering to renew the five and a half per cent. Canadian Government bonds maturing on the 1st of December next at the same rate of interest as is carried by the maturing bonds, and allowing a bonus of one month's interest, he is making a material concession to the Canadian investor, as this rate of interest — leaving out of consideration altogether the question of the one month's bonus — is higher than was paid on the recent Canadian loan in New York. As a matter of fact, the last mentioned loan was placed in New York at a figure that yielded only a very little over five per cent, whereas the rate of interest payable under the present conversion scheme is five and a half per cent.

Indeed, Canada's credit never stood higher on the New York market than it does at the present time. According to financial authorities of the highest standing and competence, the Government could borrow hundreds of millions of dollars on that market with ease, and on better terms than any other country in the world except the United States itself. This being so, the opportunity of reinvesting in Dominion Government securities that is offered to the holders of the bonds soon to mature is one of which the latter should be quick and keen—as we have little doubt they will be—to take advantage.

On every ground of national interest and national pride and national prestige it is desirable that, so far as possible, Canadian citizens should be the holders of Canadian Government securities. "Keep the loan in Canada," may well be our slogan in respect of all the borrowings which the Government may find necessary under the authority of the Loan Act, passed at the last session of Parliament.

CONTEMPORARY COMMENT

Rejection of the Dye Embargo

The announcement that the United States Congress has rejected the Dye Embargo and excluded it from the Tariff Bill will certainly cause some commotion among the supporters of the United States dyestuff industry. From opinions recently published in our columns it is clear that considerable importance was attached to the continuance of the embargo, and the decision now announced will be treated as a victory for the pro-German propagandist party. The division was a narrow one, the motion for rejection being only carried by a majority of 36 to 32. It is unlikely that men like Dr. Herty and Dr. Parsons will quietly accept an adverse decision of this kind on a matter which they regard as vital to the future of the American colour industry; but what steps they may take is uncertain at the moment. It may also be that the decision is more hostile to the form of the embargo than to its substance, and that Congress may prefer to secure the necessary safeguards by other means.

It is clear from returns just issued by the United States Tariff Commission that the American dye industry is by no means as flourishing as the earlier reports of its progress would lead one to expect. —The Chemical Age, London.

The Quality of German Chemicals

In a recent number we recorded a remark by Dr. Charles Parsons that the quality of German chemicals produced to-day is considerably lower than that of their pre-war products. Inquiries made in other quarters, both British and American, go decidedly towards confirming this view. In one case a careful comparison was made of the relative degrees of impurity in certain British and German chemicals, and it was found that while the degree of impurity in the British case was about 2 per cent., in the German it was as high as 40, with but little promise of improvement. The cause is not quite clear. Germany may have lost a good proportion of her working chemists in the war; the process of education has for the same reason been arrested and the supply of qualified young chemists restricted; works and plant may have been disorganised; and most of all, in the hurry to expedite production with a view to resuming trade, regard for quality may have been sacrificed. But the truth is, according to good judges, that the German reputation was always some degrees better than the actual performance. Germans in the past have been notoriously skilful commercial advertisers, and they succeeded in gaining for their chemical products a fictitiously high reputation. That has latterly been considerably damaged and the greatly improved reputation of British and American chemicals is a decidedly encouraging feature of the movement for developing the fine chemical industries of both countries.—Exchange.

Paper Machine Drives*

By R. W. LEEPER, Mead Engineering and Development Co.

In an article of this kind it is believed that a few remarks regarding the history of paper making will be of interest as an introduction.

The existence of papyrus has been traced back to 2400 B.C., and there is no doubt that it had then been in use a very long time and as a consequence of the conquests of Alexander of Macedon, it was probably introduced into Europe about 325 B.C. In about the eighth century the Saracens introduced paper, which is of Asiatic origin, into Spain and its use gradually superseded that of papyrus until the latter was lost sight of in the twelfth century. Near the end of the eighteenth century, the first power driven machine making paper continuously was invented, and this process gradually superseded the single sheet hand process which had been in use for many centuries. Modern paper making may be considered to date from this time, and to a man by the name of Robert, working in a French mill, is credited this invention. In 1799 the first machine was installed by Francis Didot, at Essones, France. Robert, as are many inventors, was without the necessary capital to develop his invention and finally interested Fourdrinier and Donkin, who built and installed the first machine in England in 1803. Today, after more than one hundred years, the same machine in principle is in universal use and is known by the name of 'Fourdrinier,' the manufacturer but not the inventor.

While the first machine of the Fourdrinier type, producing a continuous web of paper, was placed in operation in 1799, it was not until several years later that the dryers were added, and until the invention many years later of the web printing press, which created a demand for rolls, the paper was invariably cut into sheets.

Second only to Roberts' invention was that of Dickenson, the English paper maker, who in 1809 invented the cylinder machine which is used, as is well known, for the coarser grades of paper, the Fourdrinier being supreme for book, news and writing papers.

The manufacture of paper is one of the oldest American industries, it being introduced into America in 1690 by a Dutch paper maker. The first plant was located on a small stream near Philadelphia, and was still in operation until a few years ago. The Fourdrinier was introduced into America in 1820 and in 1829 straw was first used on a cylinder machine, but it did not come into general use until 1857.

The first Fourdrinier machine manufactured in America was built by Phelps and Spofford of Philadelphia in 1830.

From the time of the first power driven machine, the drive for the variable speed section has received much attention and it is evident that the problem is not as simple as it may appear to the casual observer, on account of the extremely close regulation required over a wide range of speed, and also on account of the 'draw' between sections. It was only natural that various schemes should be tried and those selected that were found most suitable for the purpose. This has continued until today nearly all variable speed drives in common use may be grouped under one of the following classifications or a modification thereof:

1. The Marshall-Train.
2. Ferguson Drive.
3. Rope Drive
4. Walmsley Drive.
5. The Sectional Individual Motor Drive.

The first four types are entirely mechanical insofar as the actual driving and control of the machine is concerned. With some of these drives, without doubt various members of this organization are more familiar than the author of this article, however, a few comments regarding each may be of interest.

The Marshall-Train

In talking with various operators and engineers in the industry, it has been found that this term is often misused or else is not thoroughly understood. The Marshall-Train was first developed to drive the cylinder moulds of a cylinder board machine and consists of that part of the drive from the 'back line' to the 'driving in' shaft. It is well known and has been used for many years on various kinds of machines. As a matter of fact the first paper machine to make paper continuously at 1,000 feet per minute was so driven. The details of this drive are so well known that a description of the same is believed unnecessary.

The objections to this drive are high maintenance, difficulty of keeping in alignment, and low efficiency with respect to power consumption.

The Ferguson Drive

This drive is, in a way, a modification of the Marshall-Train, the bevel gears having been eliminated. It consists, as for the Marshall-Train, of a back line driven generally by variable speed prime mover either belted or rope driven, although constant speed prime movers have been used driving the back line through some form of speed changing device.

From a cone pulley on the back line for each section, a jack-shaft on the machine floor, with its axis parallel to the back line on which is mounted an identical cone pulley, is driven through a quarter-turn belt. In order to se- belt shifting device, the draw is regulated. On the jack-shaft, in addition to the driven cone pulley, is mounted a clutch and a driving pulley, by means of the clutch, the section can be 'struck' either in or out. From the driving pulley on the jack-shaft, a pulley on the 'driving in' shaft is driven through a quarter-teurn belt. In order to secure proper belt centers, the jack-shaft and intake shaft being very close together and at right angles to each other, the driving belt is taken to the basement where there are, at suitable angles, two pulleys around which it passes. One of these pulleys serves merely to take up the slack. The other is on the driving side of the belt and subject to considerable strain. With this drive gears of the spur or herring-bone type may or may not be used between driven pulley and 'driving in' shaft, which depends upon the ratio of transmission, the speed of the machine, etc. If gears are necessary they are placed between the 'driving in' shaft and the quarter-turn drive.

Rope Drive

The rope drive consists essentially of a jack-shaft carrying a main rope sheave located near the center of the machine, its center line at right angles to the center line of the paper machine, which is driven by a suitable prime mover. From the main rope sheave the drive is extended in both directions there being a similar jack-shaft and a rope sheave for each section. Each section jack-shaft is extended and on this extension is mounted a cone pulley which drives a short jack-shaft on the machine room floor, its cone pulley being mounted either on a quill or a straight shaft and by shifting the belt on these pulleys the draw is regulated. The clutch for starting or stopping a section may be located either in the basement or between the two sections of the jack-shaft on machine room floor.

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* Address at a meeting of the American Pulp and Paper Mill Superintendents' Association, Miami Valley Division, July 24, 1922.

From the jack-shaft on the machine room floor which it can readily be seen is at right angles to the center line of the paper machine, the 'driving in' shafts are driven through spur, herringbone or internal gears, and occasionally direct connected without gears.

The Walmsley Drive

This is a modification of the rope drive, the jack-shafts in the basement for each section being retained. From the cone pulley on the jack-shaft the drive is direct to a large cone pulley mounted directly on 'driving in' shaft. In order to secure the required speed variation, the driven pulley is frequently of extremely large diameter.

In order to 'strike in' or 'out' a section, the jack-shaft in basement, on which is mounted the rope sheave and driving cone pulley, is so mounted that it may be raised or lowered similarly to a belt tightener.

This drive is extremely direct, the objections being largely from a mechanical or installation standpoint.

In the United States nearly the same results have been obtained by using an idler on the belt between cone pulleys for 'striking in' or 'out' a section. When the belt is loosened, the drive being nearly vertical and the driven pulley the larger, the belt drops away from the cone and is not in contact with it. With this drive, gears of the spur, herringbone, or internal type are generally used between the driven pulley on machine room floor, and the driving in shaft which reduces materially the size of the driven pulley.

General — Rope Drive

For nearly all rope driven machines the English system is preferred to the American system. This consists of a cotton rope for each groove, and generally enough are provided that should one or even more fail on any particular section, the machine can still be kept in operation until Sunday when it can be spliced. With the American system considerable space is also required for the tightening devices, and as a rule there is little space to spare in the average machine room basement.

Sectional Individual Motor Drives.

For several years electrical methods of power distribution and application have been rapidly superseding the mechanical. This, together with the demand for higher and still higher speeds and increased production, demanding more power per section, it was but natural that efforts should be made to perfect an electrical drive for the paper machine, for on this important machine depends finally the success or failure of the installation. If continuity of service and accurate speed regulation is not secured, production cannot be maintained and the mill will not be a success, as the other parts of the development are but auxiliaries to the final conversion.

The problem was exceedingly difficult on account of the extremely close regulation demanded, not only between sections, but for the machine as a whole and frequently over a wide speed range. Further, the regulation must be maintained regardless of slight load changes. In the experimental stage, it was soon found that motors could not be built and direct connected or geared to each section which would perform the duty demanded, unless interlocked either mechanically or electrically, and in addition, any such interlock must provide for the draw, which still further complicated the problem.

Today it may be safely stated that this problem has been solved, as there are at present three types of drives, entirely different as to principle, in successful operation in North America which are known as—

The General Electric Drive.
The Harland Drive.
The Westinghouse Drive.

In an article of this length it is possible to give but the briefest description of these drives.

The General Electric Sectional Drive

This drive consists of a direct current adjustable speed separately excited motor, either direct connected or geared to each section, the current for these motors being supplied by a constant speed separately excited generator driven by any form of prime mover that may be selected. There is also a constant voltage exciter which supplies the excitation for the motors and generator, this arrangement being slightly different from the usual direct current equipment which is self-excited.

To each section motor shaft is geared a synchronous unit of approximately 20 per cent. the capacity of the section motor. This unit may operate either as a motor or generator. Normally, however, little, if any, power is transmitted either to or from it. The synchronous units for all sections are excited by the main exciter and the stator leads are all connected to a so-called dead bus. In other words, this bus is not energized by an external source of power, and inasmuch as all section synchronous units are connected to it, they must, of a necessity, operate at the same frequency. What is ordinarily termed the stator of such units, is rotated through a worm gear by a very small direct current motor in parallel with the large motor. By strengthening or weakening the field of this motor, the draw is regulated.

The speed of the machine as a whole is controlled by regulation of the generator voltage, and if the range be great, by a combination of voltage and field control.

There is also supplied control panels for the generator and for each section motor, which may be either manually operated or under remote control, by means of a master controller or push button station.

This drive is entirely electrical insofar as drive and interlocking is concerned, there being no mechanical connections between sections or for the adjustment of draw.

The Harland Drive

The Harland drive, as for the General Electric drive, consists of an individual direct current adjustable speed separately excited motor for each section, the direct current therefor being supplied by a constant speed generator. There is also a constant voltage exciter for the generator and motors.

One of the section motors constitutes the master drive, and from its 'driving in' shaft through bevel gears, a small line shaft which extends the length of the machine, is driven. This is known as the 'Master Shaft' and may be located either in the basement or on the machine room floor. From this shaft through bevel gears, a spur shaft is driven for each of the remaining sections. Each motor, through a cone or expanding pulley drive provides for regulation of draw, drives a second spur shaft. The spur shafts driven by the motor and master shaft respectively terminate in a differential gear box. One spur shaft is an index of the speed of the master section, the other a correct and accurate index of the speed of the section motor.

This may be compared to an automobile rear axle system with which everyone is familiar, one axle being driven from the master shaft, the other by the section motor. It is well known that every differential comprises three movements, one of which is an exact reflection of the difference in movement of the other two. In the case of the motor car, the third member is the driving shaft, the enclosing case being stationary. In the case of the Harland drive the third member is the differential case. Except on starting, when regulating rheostat is short circuited, it does not rotate but indicates any angular variation between the two shafts. This motion (tendency to move.—Ed.) is used to strengthen or weaken the motor field, thus the speed of each motor is held in relative synchronism with the master shaft at all times.

The speed of the machine as a whole is regulated by adjustment of the generator field rheostat, or where there is a wide speed range, by a further adjustment of a second field rheostat controlling the fields of all motors, the two rheostats being controlled as one unit, insofar as the operator is concerned.

For each motor there is provided an individual starting panel with the necessary instruments, contactors, etc., or if desired, the entire machine may be arranged for remote control by means of master contractors and either master controllers or push button stations.

This drive is electrical only insofar as the actual drive is concerned, the interlock and regulation of draw between sections being obtained by mechanical means.

Westinghouse Sectional Drive

This drive, as for the preceding drives, consists of a direct current adjustable speed separately excited motor for each section, either geared or direct connected to the 'driving in' shaft. The current for the section motors is supplied by a constant speed, direct current, separately excited generator driven by a suitable prime mover. There is also a constant voltage exciter which supplies the excitation for the generator and motors.

For the entire drive there is also supplied a master frequency generator to which the speed of each section is referred. This is driven by a direct current variable speed motor, operating in parallel with the main section motors.

For each section motor there is a small frequency generator or rotary contactor which is driven through two small cone pulleys equipped with belt shifting device by which the draw is regulated, driven by a chain drive from the main motor. This drive transmits only the power required to overcome the friction of the small ball bearings of cone pulleys, etc. In reality it is merely an indicating device.

The field of the master frequency generator and section frequency generators are excited from a sixty cycle source. If there is no sixty cycle current in the mill, it is readily arranged for by the installation of a small motor generator set, and insofar as the drive is concerned, extremely close speed regulation is not necessary.

The rotary contactor for each section is mounted on the section control panel and consists of two contactors operated by a balanced relay. This balance can only exist when the frequency of the master frequency generator and the section frequency generator is the same. The slightest unbalancing of frequency between the two generators operates the balanced relay of the section affected, causing it to tend to speed up or slow down, as the case may be, until the balance again exists.

As for the other drives, the speed of the entire machine is controlled by voltage, or a combination of voltage and field control.

With each section there is also supplied the necessary control panels, etc., and if desired the control for the entire machine can readily be made entirely automatic.

The interlock of the sections with this drive is entirely electrical, the only mechanical parts retained are the small cone pulleys, and the driving mechanism for the control of draw.

Constant Line

Should an article of this nature close without at least some reference to the constant line, it might seem to some as if an important part had been neglected. This drive is, however, extremely simple compared to the variable line, and everyone in this audience is familiar with it.

For the constant line equipment 'Group Drive' has been and still is generally selected. It is true that in a few cases individual drive has been installed for these important auxiliaries, but when considering the number of group drives in operations it would appear that this type is preferred by the operator. There are many good reasons for this, for instance; the equipment is slow speed requiring an inefficient and expensive motor if direct connected, and if belted the only addition for group drive as far as friction is concerned, is a short jack-shaft, if the installation is properly laid out.

The driving unit for the constant line should, however, be carefully selected depending upon the demand for exhaust steam as it may be found even in an otherwise electrically driven mill, that an engine will be more efficient than a motor.

Conclusion

In an article of this length it must be remembered that it is impossible to more than touch upon the major differences of the different drives. This is especially true with respect to the sectional motor drives, for any one of which, were a complete description given, many more pages than has been written would be required.

HENRY SORGIUS SAYS

Henry Sorgius, Manager of the St. Maurice Forest Protective Association, patrolling over 15,000 square miles of Central Quebec, is excellently qualified to give an opinion on any problem of forest protection. Note Mr. Sorgius' statement on the importance of educational propaganda:

"Every Dollar spent in educating the public against forest fires is worth over $2,000 spent in detecting of fires. This is the only method to obtain real protection, and I am saying this after my eleven years in this particular line of work.

"It is through experience that we are apt to know the best means. Look at the results that we have obtained with the settlers, log drivers and railways, and this I may say is all due to the education of the public either by posters, lectures, etc. If we want to save our forest we will have to prevent fires and not wait to detect them, when it is too late."

The Canadian Forestry Association utilizes more than twenty channels with hard-hitting propaganda to reduce forest fire losses.

'Educational patrol' is the cheapest and most effective Timber Insurance yet discovered. It is not a cure-all, nor a substitute for a ranger system, by any means. But no ranger system can function effectively unless accompanied by sensible and persistent propaganda.

No limit-holder can afford not to support the Canadian Forestry Association.

When the Printer Selects Paper For an Order

BY ED. A. BORDEN

[In an Address]

All of the characteristics of a sheet must fit the personality and business of the advertiser or customer, and must appeal to the taste of the recipient. A mailing piece on pink papeterie would hardly be suitable for a hardware company to use in advertising to farmers. Neither would a hard white enamel be suitable to the advertising of a beauty parlor—nor could it be used well for a musical program. The finish must be considered in relation to the type where the latter has been previously determined. A type with hairline elements and angular serifs does not harmonize or work well on a cockle or eggshell finish, while the ecclesiastical black letter looks out of place on the modern enamel or "super." A rough letter, such as Pabst or Packard, is inappropriate on a highly surfaced stock.

The finish necessary for illustrative work requires careful consideration, often being a very technical matter when fine-line halftones are involved. Etchings may be used on some soft, rough stocks if the run is not too long or the lines are not too fine.

Finish often governs the appropriateness of the paper for the subject matter. Thus the laids, eggshells and antique finishes denote antiquity; the enamels, supers and dull coats on the other hand have a distinctly modern tone. Some jobs call for soft finishes; others for novelty and fancy finishes, and still others for dignified, glossy finishes. A white, dull-coated stock would soon become soiled and worthless as advertising matter if put in rough, soiled hands. A smooth, hard finish in a dark color would be much better for such a purpose.

Durability is necessary for mailing pieces and folders requiring much handling, and for loose leaf work and blank books. A job that is to be punched by all means should be on a rag content bond with proper formation and finish. Any important correspondence calls for a light bond second sheet. Many executives have been rudely awakened by finding an important file of letters torn, frayed and undecipherable when a few cents added to the cost of the paper would have been insurance against the loss.

Insurance policies, bonds, deeds and similar instruments call for the most durable of bond papers. A printer who suggests cheap paper when durability is required does his customer a grave injury instead of a service. The printer should be wary of a paper that is heavily surface-sized to give it a crackle and high pop test. This sizing deteriorates and is a false surface indication of quality.

Colored papers serve to produce various desired emotions and to fit particular grades of work. Light tints of warm colors express frivolity and passing fancy. The cool colors and dark shades are adapted to serviceability and advertising which bids for concentration on the subject matter. A folder announcing a dance could be printed to advantage on a pink or orange sheet, but an advertisement of specifications for engineers' supplies should be on gray or blue shaded stock.

White is always a dignified color. A cream white shows sedateness and often indicates antiquity. It is suitable for brown or warm colored inks. An intense white or blue-white would be ideal for reproducing a snow scene, white objects and for cold colored inks.

Weight, of course, denotes quality, other factors being equal. A letterhead on sixteen-pound bond, even if of good quality, would hardly suggest dignity and reliability for a banking institution to the same extent as would a twenty-four or twenty-eight pound stock. Weight in cover papers not only gives distinction for booklets, but also affords added protection.

Mailing pieces require careful attention to the matter of weight in order to reduce postage. The alert printer can serve his customer well by careful attention to the weight of the finished piece.

Special processes require special qualities of paper as in the case of offset and rotogravure work. Certain lines of work have clearly defined practices in paper selection. The old familiar hand bill would show something amiss even to the layman if printed on a crackly bond. It cannot be stated too strongly, however, that the best quality of its kind is none too good for any paper which bears a selling message to the prospect.

The discriminating printer will see that on jobs of a permanent nature, or semi-permanent, such as menus, programs, posters and notices, the color and finish of the paper harmonize with the decorations and finish of the place where the printed pieces will be used.—*The American Printer* for April 5, 1922.

FULL TIME MEANS PROSPERITY

When factories run on full time they make money. When they run on half time they do little more than keep the workers employed, so that the force may be kept together and ready for the next full time and profitable period.

Every human being is some kind of a factory. He may be merely an energy factory, like a day laborer, or an idea factory like an inventor or a novelist, or a combination of both like the average man of your acquaintance.

As a factory it is profitable to him to run full time. Overtime is often helpful, but it isn't necessary, and too much of it is often hurtful.

But full time is necessary to ensure profit. Work eight hours at least every day, if you expect to get a reputation for steady output and good quality. And without such a reputation no factory can ever prosper.

Work half time, and you do exactly as does the other kind of a factory in a slack time period. You keep your faculties on the job, but not working hard enough to improve in their several crafts.

You get enough out of it to pay for your board and clothes, but not enough to prove to yourself that you amount to something. And a money return is always at least one measure of success, though not always the only one.

Get all the qualities and faculties that you employ in your factory down early, and keep them there till the established quitting time. Work them hard and steadily, without too much time off for lunch, or too much opportunity to think of other things beside the business at hand.

But the important thing is full time. It is your factory, and you are concerned in its profits. If you don't insist on full time nobody else will. But if you want it to make money, and to turn out a good reliable product, you will shut down just as infrequently as possible.

DO NOT BE A CARELESS CAMPER

Extinguish all fires after every meal.

Before breaking camp make a general survey to prevent bush fires.

Make the woods safe for others.

Give Your Men a Chance to Learn

By JAMES H. COLLINS

The all-around ability of the employe in any industry—the ability—or knowledge, if you will—which enabled him to tackle any task in the plant, successfully, is gradually disappearing during the present machinery age.

Employers now realize that this all-around quality in workers must be restored.

In this article Mr. Collins tells how various industries are giving their men the general knowledge of the industry in which they are engaged—making the men more interested in their jobs, developing executives, and, above all, developing a higher degree of craftsmanship.—The Editor of "Ben Franklin Monthly."

Up in the Canadian woods they were getting ready to take out a big "spar tree." There was a college man in camp. He thought he knew how to use an ax—had often cut down small trees back home. He asked the foreman if he might cut this giant fir. The foreman's refusal was kindly:

"There is only one layout for that tree," he said. "She must go between that hemlock and the tall spruce. If it falls anywhere else, our work will be balled up—you might even lock it onto another tree. It takes three years to make a good 'faller.' The head 'faller' and I must cut this one."

The college man was humiliated, but got some idea of the technicalities in work like logging, popularly supposed to be "unskilled."

The next day was Sunday. He and the foreman had a talk. The latter said he envied the college man's knowledge of geometry, algebra, and even physics, for he felt that with a background of science and his practical experience, he could learn lots more about logging. A little science would enable him to handle forest giants much more skillfully, quickly, and with less drudgery, and perhaps save several men from being killed and hurt every year in the woods for lack of theoretical knowledge. Canada is now studying ways to give such men the theoretical training needed in their every-day work through the "university in overalls."

It used to take nine tailors to make a man, and at least three tailors to make a suit of clothes. Today, it takes several dozen workers to make a coat. Formerly, the cobbler made a pair of shoes, but now shoe-making is cut up into a regular jig-saw puzzle of little tasks.

"Where can we get all-around men who know how to tackle a machine-shop job—maintain a railroad track—repair a watch?" executives are asking—everywhere the same complaint. After cutting work up into specialties, and the specialties into bits that can quickly be taught a greenhorn, industry now finds that it has eliminated the all-around worker who knew the whole trade, and could be counted upon for supervision and improvement. Moreover, it needs all-around men of kinds not developed by old-fashioned apprenticeship—men who understand designing, selling, accounting, management and the like, from the theoretical as well as the practical side.

Things have gone so far that industry is threatened, and the worker is threatened even more. It is often said that the present-day industrial worker is a machine, but the blunt truth is that he is less, for his task is often so simple and impersonal that he can be more easily dispensed with than the machine he operates.

When the teacher sent little Jakie Cohen home with a note asking that his neck be washed, his mother wrote back: "Don't wash Jakie—learn him!" And that is the answer to the executive's question: "Don't complain about workers' knowledge and ability—teach them."

The employe may be more far-sighted in this matter than the boss. One of the correspondence schools that specializes in technical training has lately begun publishing a monthly journal called *"Trained Men,"* entirely devoted to this subject of employe education, emphasizing its advantages to the executive more than those for the employe — largely because the latter has already been "sold" on industrial education. That employes are very often making their own efforts to acquire the theory behind their jobs is shown by the number of students in nearly nine hundred manufacturing, commercial, transportation and mining corporations. More than three hundred railroad companies have employes who are studying correspondence courses, $80,000 worth of such courses having been sold to employes of a single railroad in less than five days. Very often, an educational movement of this sort will get under way among employes almost unknown by employers. Real desire to learn furnishes part of the impetus, and systematic sales work and study supervision by correspondence school the rest. Employers become interested when the correspondence schools report to them the progress of individual employes, and when promotion demonstrates that such training is sound, employers frequently offer to pay part or all of the tuition fees for employes who will study courses within their abilities.

There are several distinct kinds of education needed in nearly every business.

The commonest is simple task teaching, which may comprise anything from showing Johnny, the new office boy, how to wield a broom, up to the multiplication of riveters in a shipyard by separating the work into its basic parts, and showing an expert riveter how to teach it to the novices — something that was done most successfully during the war. Task teaching quickly gives the worker earning power, and the employer production. There it is apt to stop for both of them, however, unless linked to the tasks that go before and come after, and the theory behind all of them. Probably not one worker in ten is interested beyond his task. But the tenth fellow, who is, can be developed. Wider knowledge will fit him for supervision, inspection, transfer from department, as the need arises. If the employer neglects his training, he will train himself and market his increased ability in some other plant.

Task teaching is pretty much a plant activity, because tasks differ in each plant.

Theory teaching is seldom successful as an exclusive plant proposition, say educational experts. Only the largest corporations can afford to maintain private schools for teaching subjects like printing, engineering, mechanics, administration, metallurgy and the like. Good teachers are scarce and costly. Good text-books written from the slant of a given business are even more expensive. Employes who might benefit by the school are often widely scattered. The breadth of such studies peculiarly adapts them to the text-books, teachers, and systematic encouragement of the correspondence schools.

How a thing is taught makes more difference in results than is expected by the "practical" man who criticizes teachers for "too much theory." As an example of good teaching, take a subject which many workers are anxious to study—the English language, which is needed by the foreign-born, as well as common school studies by workers born in this country, but enjoying little schooling. Given ordinary text-books, the Italian or Slav would find himself hopelessly entangled in grammar. Using the lessons prepared by Dr. Peter Roberts, a real teacher, Giovanni or Jan find themselves learning words that they can use every day in finding a job, buying clothes or taking a railroad journey.

Still another important field of teaching is that which imparts the things that lie beyond even the technical theory of a business concern or an industry—its policies, spirit, broad tendencies, and the general direction of its invention and progress. These are not taught in classes, but spread through encouragement of reading technical and scientific journals and books. Some business concerns subscribe to enough copies of important periodicals to maintain a circulating service of marked copies, each article automatically coming to every person in the organization who ought to read it. Other concerns, finding many books purchased by the management are scattered through different departments, have brought them together in a special library, to which every interested employe has access. Yet again, each broad subject pertaining to products, processes, research, mangement and the like, is systematically covered by clippings and filing important articles as they appear, with a portfolio devoted to each subject.

It is now widely admitted by employers that the all-around quality in workers must be restored by teaching.

It is not so widely realized, however, that workers want to be taught—that they see in study their chief opportunity for advancement, and are willing to make real sacrifices to acquire knowledge. Not all workers appreciate chances to learn—perhaps not one in ten, or even one in twenty. But those who do, the intelligent, ambitious, healthy-minded men and women, are enough to leaven the mass and furnish the initiative and leadership that has lately been disappearing from American industry.

NEW BRUNSWICK NEWS

Howard Beedy, vice-president of the Oxford Paper Company which concern controls the Nashwaak Pulp and Paper Company, spent most of July and part of August in New Brunswick, looking after the interests of the Oxford, and the subsidiary company. Hugh Chisholm, the president of the Oxford Paper Company, has also made two trips to New Brunswick from his headquarters in Portland with business objectives. The Nashwaak Pulp and Paper mill at St. John is being enlarged, and the expansion of business is expected to be considerable. The inadequate water supply furnished by the city of St. John is now the only fly in the ointment. The company is now endeavoring to obtain increased water supply. Until this is secured, the company will be handicapped.

Mr. Beedy, has also spent some time at the pulp areas of the company on the Nashwaak and Miramichi rivers in central New Brunswick. Large tracts have been acquired and in addition to the timber tracts, the company has purchased coal lands on Grand Lake. Preparations are being made to work the coal properties.

No less than 667,300,000 feet of lumber were driven down the Nashwaak river for the season of 1922. Of this, 400,000,000 feet were the property of the Nashwaak Pulp and Paper Company. The company is now repairing the pier at Penniac and the booms at South Devon and Marysville, at the mouth of the river.

In a few years, there will be but little left of the ill-fated pulp mill at Black River. The wind and sea, coupled with disuse, have wrought much damage on the deserted mill. Twenty years ago, this mill was founded at Black River by St. John capital headed by B. Mooney and Sons, contractors. The mill was built by them and for two years was operated. Then it was closed and has not been reopened.

C. Y. Major, doing business in pulpwood in New Brunswick has assigned. His liabilities are $30,000, and his assets, $2,500.

Massachusetts manufacturers are casting eyes at the St. Croix River as an industrial area in consequence of the freedom from labor troubles, and the prospects of excellent hydro-electric power in abundance. The St. Croix Pulp and Paper Manufacturing Company has been singularly free from labor troubles, in the big plant at Woodland. To the advantage of being free from difficulties with help, has now been added the hydro possibilities of Cow Bay on the Maine side and Musquash on the New Brunswick. It is estimated that this is the most expensive completed, there having been a hydro-electric station established there by the New Brunswick government.

The blame for the delay in the establishing of the new mill at Bathurst, by the Bathurst Lumber Company, which operate the saw mill and pulp mill at Bathurst, has been placed on the shoulders of the present personnel of the Workman's Compensation Board for the province of New Brunswick. It estimated that this is the most expensive compensation board in existence, and the manufacturer must pay the penalty. Angus McLean, the aggressive president of the Bathurst Company has been fighting tooth and nail against the board.

P. G. Mahoney of Melrose, dealer in pulpwood for many years, and owner of large tracts of pulp land in Westmorland, Albert and Kent counties, died in August. His wife died only a year ago. He is survived by three daughters and two sons. The late Mr. Mahoney was formerly a member of the New Brunswick legislature and was minister of public works for a few weeks, being defeated when he sought re-election follow his appointment. The funeral was largely attended, lumbermen from all parts of the province being present. Mr. Mahoney was a Conservative in politics.

The St. George pulp mill, new controlled by the Pulitzer interests of the "New York World", has been operating satisfactorily all through the summer. The Musquash hydro-development is expected to benefit this mill more then any other pulp and paper mill in New Brunswick, in view of the proximity of the mill to the hydro station. St. George is but twenty miles from Musquash. Since the "New York World" secured the controlling interest in the mill some improvements have been made in the machinery.

AND YET MORE PAGES

It is interesting to note that 17 New York City newspapers listed in the Evening Post's tabulation for July show a loss of approximately one hundred and twenty-five pages of paid advertising as between 1920 and 1922 but an actual increase in total number of page sizes in the same period of 1,468. With page sizes varying from 1,100 lines to 2,400 lines, it is of course difficult to make any correct estimate, but on a basis of an average page of say, 2,000 lines, it is shown that advertising in the 17 papers in July, 1922, amounted to 5,353 pages; whereas, the total number of pages amounted to 12,440.

In July, 1920—the peak year of advertising—the advertising lineage figures of these same papers totaled 5,477 pages; whereas, the total pages including text, features, news and advertising amounted to 10,576 pages.

Surely the New York publishers are dealing very liberally with their readers in the matter of increased pages, more generously in fact than good, sound business judgment seems to justify. For a rough estimate of the cost of paper, postage, mechanical, etc., would indicate that these 1,468 pages cost the New York City publishers more than a million dollars in cash.

Editor and Publisher

News from Europe

The Business Position of the German Paper Trade

The Union of German Publishers, Book and Paper Manufacturers has just issued a detailed report of the business position in the entire industry. It is most comprehensive and incidentally throws light on the present methods of conducting business. The General Secretary writes:

The reports from the manufacturers of newsprint, book papers and boards disclose a very unequal business position. In June, as compared with May, an improvement in some branches of the trade was noted, and in others the position was decidedly worse. In most departments the number of orders received, especially from foreign countries, declined sharply. Those mills which up to the present time, have had good business, complain of the lack of raw materials and especially of sales of paper at open prices. Very disturbing factors are, the continued rise in freights and shortage of fuel. Everywhere complaints are made of the lack of capital. Owing to the rapid rise in the cost of raw materials the mills have been unable with their own capital to meet the immediate needs for new expenditures, so that, in spite of apparent profits, which after all are only paper profits, a rapid progress of impoverishment must be reckoned with. As regards the individual branches of paper making it is reported:

In the tinted paper industry the home market has distinctly gone back in its capacity of absorbing supply, for the purchasing power of the consumer has diminished. In the European countries, German prices can no longer be maintained, owing to underbidding by Belgian, French and Scandinavian mills. Orders from abroad have consequently fallen off in part. While the supply of raw materials is better, an unfavorable influence is the increase in freights and coal prices. In the middle of June, wages were increased with retroactive effect to June 2; operating costs, the rise in the price of paper and coloring matters, forced up selling prices to a new high level against the convention price. In the chromo paper industry an active demand was maintained in spite of the general increase in costs. As a consequence of a violent rise in the cost of raw materials, the prices in effect since May 1 had to be raised again at the end of June.

From the reports of the mills of the Union of German Gum Manufacturers it appears that business in June was fluctuating. Prices reached the level of the world's markets, and have even partially over-stepped them, so that no inducement was held out to foreign buyers. The supply of raw materials was bad, and wages were raised. The Union of Photographic Cartons reported poorer business, lack of export orders, and consequently a drop in exports. The Association of Manufacturers of Photographic Boards reported that out of old orders which, owing to the lack of raw materials, could not be filled, a certain amount of business was still on hand, but that new orders from home customers were *nil,* while the receipt of new orders from abroad, had ceased almost entirely. The supply of raw materials was poor, prices very high. Consequently the selling prices were raised. These in many instances have overtopped the world's markets.

In the Bag and Paper Industry the business position has become very acute. A greater amount of deliveries to foreign markets was rendered extremely difficult by the high prices, and in fact was profitable in special articles only. On the home market prices could be obtained which conformed to the higher cost of paper. However, under bidding in some special sorts was again in evidence. Business in paper sacks continued good, although it might be better, if the supply of paper were better. Demand for paper sacks is still satisfactory, yet to some extent it was noted that orders were not coming in so plentifully. As a result of the high prices of paper and of high wages, selling prices were raised in proportion.

According to the returns of the Association of German Box Manufacturers, business showed the same satisfactory volume as in the preceding month. The supply of raw materials dragged along more slowly than ever; prices of paper rose with every delivery, sales in each successive case were made at higher figures—quite regardless of those stated in the contract—in order to avoid loss. In the Carton Industry as the Central Association of German Carton Makers reports, business appreciably declined, partly on account of unsatisfactory deliveries of raw materials, partly because high prices made customers resort to cheaper packing material. The cessation of exports was almost complete, and while it was necessary to force up prices, they remained considerably below the cost of production. In the mills of the Association of German Manufacturers of Pharmaceutical Cartons and Paper Products, the position continued, as in the previous month comparatively satisfactory. On the other hand the supply of raw materials was again beset with difficulties, and selling prices were raised 20 per cent., wages about 15 per cent. The Association of Manufacturers of Corrugated Boards reported a further falling off in business. The anticipation of cheaper prices continued to press upon the distribution of orders and was strengthened by rumors of overproduction. Exports stopped, but the supply of raw materials was satisfactory. The mills reported excessive wage demands. Negotiations in this matter struck a snag, upon which the workmen of several mills went on strike.

As regards copy books, ledgers and commercial charts the business position is worse, because larger sales to the East could not be effected, but deliveries of raw materials improved on rising prices. Orders from foreign countries declined materially. From the wall paper industry a worse state of business was reported. Owing to the enormous prices of raw materials, like paper and dyes, and to wage increases, the selling prices of wall papers have become too high. Also exports have fallen off, for the prices on the world's markets have been reached, and even exceeded. In June, 3 to 4 marks wage increases had to be granted.

The Exchange of German Booksellers at Leipzig reports that in the book trade a drop in production is not to be recorded, if the number of new editions is considered. The supply of paper has met with no special obstacles. Nevertheless the steady rise in the price of paper is deplored in vigorous terms; likewise the unscrupulous way in which prices are figured with reservations in advance, since the paper mills only offer and sell at prices of their own option, and reserve the right to fix the final amount *first* at the time of delivery (A curious way of doing business indeed! Trans.) The steady rise in prices, however, in the book and bindery trades provides plenty of difficulties in the matter of business, for on its part the book trade has to reckon with the increasing poverty of the public, and to a much greater degree than the industries working for the trade consider needful and are prepared to recognize. Hence the prices of new editions in many instances have risen to 28 times the pre-war figure. Besides which the general business expenditures of the book trade show a steady rise, particularly in the new increases in postal and railway rates, which will strike a hard blow at business. Nor are new wage increases wanting, so that it would be fair if the freight rates were held within the limits of the increase in wages. A retrospect of the book printing trade shows a satisfactory course of business. In some measure the supply of raw materials presented difficulties, yet materials such as oils, metals, and half-stuff rose appreciably in price. Selling prices were raised 25 per cent., wages, according to the schedule agreed upon, about 10½ per cent. It is particularly noteworthy that the lack of skilled workmen disturbed the balance of production to an increasing extent.

In the engraving trade business was much as usual, though a falling off must be recorded, as old orders were gradually worked off, and new orders came in but slowly. Of the supply of ra wmaterials no complaint can be made. The selling prices were scaled up to the increased costs of production. In the photo printing trade a slight improvement followed the stagnation of May. The supply of raw materials was satisfactory. Foreign countries, after holding back for awhile, appear again to be placing large orders. The Union of Chemographic Mills and Copper Engravers states that business continued very good, except in South Germany, where a drop was complained of. The supply of raw materials, as before, met with difficulties, since the mills demanded long periods for deliveries and would not be bound by fixed prices. Selling prices were raised 20 per cent, and wages about 130 marks a month. Exports were quiet. In the postcard business no material change occurred. The Autochrome Convention reported a more unfavorable position of business. The supply of raw materials was better with higher prices. The Union of Playing Card Manufacturers reported that business in old orders continued good, but new orders were scanty. The provision of raw materials was difficult; prices rose sharply."

The Eight Hour Day in Practice

The influence of the eight hour day on output, has been investigated by the German Ministry of Labor. According to the report in the social-democratic organ, the Hamburg "Echo" production in an eight hour day is greater than in a day of nine or ten hours. Statistics in this case bear out their well-known reputation. For, although, as the "Wirtschaft und Statistik" asserts, the output of the bituminous coal miners has been increased in the eight hour day, another authority states that the true reason is the installation of better machinery with better living conditions. A questionnaire addressed to the great industrial companies has completely refuted the argument for the eight hour day. The answers establish beyond doubt the diminution of output under the eight hour system. The truth is elicited at last. While the diminution differs in various industries it is universal. The difference is due, among other causes, chiefly to machinery. When output is mainly the work of machinery, into which the good will and disposition of the workman do not enter to any great extent, the diminution is one-fifth. On the other hand in paper and pulp making, where the workman's personal qualities are factors, the diminution is 20 per cent." For the same amount of production that in pre-war times we obtained in a ten hour day with 130 men, we must now employ 180 men in an eight hour day." This is the statement of a paper mill. The season of the year, or the weather it may be, seems to have a distinct influence upon the workman's output. From tables published in Pappers-Och Travarntiching, it would appear that output is greater in summer, indicating that more energy and will are put into the work, probably with the idea of getting off earlier. Even warm partizans of the eight hour day have to admit that idleness breeds laziness, and that shorter hours of work may have the same effect.

Another Rise in German News Print

The beneficent action of time does not apply to German newsprint, which keeps up its phenomenal character. The Association of News Print Manufacturers has just announced the prices for August; for paper in reels 1929.50 marks per 100 kilos; for paper in sheets 1937.50 marks per 100 kilos. The average price f.o.b. mill is 1959.50 marks per 100 kilos, about 20,000 marks per long ton.

WHO SAID BUSINESS IS BAD?

Just how bad is business? We have heard a lot about hard times and scarce orders, but let's get down to brass tacks and find out whether business is really as bad as it is painted. In most cases we find that conditions are exaggerated. Many persons are deluding themselves with a parrot-like echo of some calamity howler's line of talk, for which there is no foundation.

Take the manufacture of paper, for instance. In 1918, the last war year, production of book paper for the month of May was 78,455 tons. That was not a bad year. Nobody was howling calamity. On the contrary, conditions in this country were particularly good. In 1920, the year of "peak" prices, and "peak" prosperity, if there is such a thing, the production of book paper for the month of May was 92,856 tons.

Now look at May, 1922, the year of "bad business," "dull times,"etc. For May, 1922, the production of book paper was 82,574 tons, almost 4,000 tons more than in 1918 and only 10,000 tons less than in 1920. That doesn't look like a business panic.

Then take the production of fine paper. It tells a similar story, only more so. In 1918, the production of fine paper for May was 33,542 tons. In 1920 the production for the same month was only 31,575 tons and in 1922, the year of "terrible business depression," the production was 30,129 tons. Not so much difference, considering the fact that the "Jonahs" have us on the verge of a business catastrophe.

Perhaps as good a barometer as anything is the production of newsprint paper. When conditions in the country are flourishing the press is flourishing — the big dailies in the large cities as well as the small town dailies and the country weeklies. The production and importation of newsprint shows how much paper is being used by the newspapers. The more paper used by the newspapers the more prosperous are those newspapers. And as newspapers are prosperous, so are general business conditions good.

Let us look at the figures. In 1918, for the month of May, the production of newsprint was 111,242 tons. In 1920, the "peak year," the production was 129,230 tons. In May, 1922, however, the production kept right on rising and the figures show 129,950 tons. Then in imports the same story is found. Imports for the year 1918 were 596-270 tons. For 1919 they rose to 627,529 tons. In 1920 they were 729,866 tons and for 1921, the upward movement continued, showing a total of 791,978 tons.

These figures bear studying. Certainly they do not indicate that the paper industry is in a bad condition.

As a matter of fact, now, between ourselves as man to man, business is pretty good after all, isn't it? Let's go! — U. S. Paper Maker.

THE COST OF MISSING

If you are getting $40 a week, and another man is promoted to a $50 job because he knows more about the business than you do, whose fault is it? You have lost $520 a year. You can become well informed through correspondence instruction for a fifth of your loss.—Ask the Editor about it.

PULP AND PAPER NEWS

The Federal Paper Company, Limited, Montreal, have issued a neat sample book of papers, featuring some of their special lines.

The Trades and Labour Congress of Canada, at their annual meeting in Montreal last week, passed a resolution asking the Federal Government to undertake public works, including reforestation, in order to provide employment. The rates to be paid must be of of course, on the union scale.

In a letter received in Montreal from England it is stated that the British paper mills are short of orders. A certain amount of export business is being done, but the prices, especially those received in Australasia, are under cost.

The Donnacona Paper Company, Quebec, have found the experiment of sending newsprint by water a great success. There is a very considerable saving on freight, and the method of transportation has proved expeditious. It can, of course, only be used in the summertime, but sufficient tonnage can be sent during those months to make the method worth while.

Wax Paper Products Company, Limited, a new organization recently formed in Toronto, started operations this week in their premises at 43 Britain Street. The firm are operating with a new process of impregnation instead of coating and is starting with a promising outlook. The president is C. E. Calvert and the Vice-President and General Manager is A. J. Dove. The directors are J. R. L. Starr, W. T. Giles, H. C. King and Col. Boyd Magee. The business office, which was formerly at 79 Adelaide Street, East, has been moved to the factory.

The National Pad Company, 443 King Street, West, Toronto, has assigned, with assets of $40,000 and liabilities of $97,000. Assets are composed of machinery and book debts. The majority of the creditors are English and Irish. A meeting of creditors has been called for the end of this month.

Alex. Buntin, of the Buntin-Reid Company, paper jobbers, Colborne Street, Toronto, has returned with his family from an extended holiday trip to Murray Bay.

W. W. Murphy, Winnipeg representative of the Barber and Ellis Company, wholesale and manufacturing stationers, has returned to the western city after spending some days in Toronto. While in Toronto he was a guest at a luncheon of the Canadian Paper Trade Association.

Harry Wilson of the Wilson Stationery Co., and the Winnipeg Envelope Co., called on the paper trade in Toronto recently on his way to Montreal.

About thirty-five members of the Toronto Club of Printing House Craftsmen, together with several representatives of the paper trade, left Toronto on Aug. 26 to attend an exposition and convention of craftsmen in Boston. They left via the Canada Steamship Lines and spent several hours in Montreal en route. J. C. Acton, of the Acton Publishing Company, will have charge of the craftsmen's exhibit at the exposition.

R. E. Milligan, of the Seaman-Patrick Paper Company, Detroit, was in Toronto during the week calling on the local paper trade.

The Hydro-Electric Power Commission of Ontario has entered action against the Nipigon Fibre and Paper Mills, Limited, to recover $93,568.68 for electrical power supplied. Suit has also been brought against the London Guarantee and Accident Co., under a bond of $40,000 on the Nipigon Fibre and Paper Mills.

The Canadian Paper Trade Association held a regular semi-monthly luncheon at the King Edward Hotel on August 23 when the long price list which is to be adopted in the paper jobbing and printing trades on September 1st was up for consideration.

Word has reached Toronto that the Westminster Paper Mills, Limited, who are erecting a paper mill at New Westminster, B.C., will start manufacturing about Nov. 1st. The equipment for the mill has arrived and is now being installed. J. J. Herb, formerly of Thorold, Ont., is the president and general manager of the company, and Harry M. Lord is the secretary-treasurer. Michael Herb will be sales manager.

S. F. Duncan, Secretary-Treasurer of the Provincial Paper Mills, Limited, Toronto, is spending a few days in Kalamazoo, Mich.

A visitor to Toronto during the past few days was George Allan, of the John Martin Paper Company, Ltd., Winnipeg. Mr. Allan was on his way back to the west after having visited Ireland, where his old home is located. After viewing the unhappy state of the Emerald Isle the Winnipeg paper man declared that he was more than ever impressed that Canada was the best country on earth in which to live.

Further information to hand concerning the Thunder Bay Paper Company, which is the Canadian branch of the Consolidated Water Power and Paper Company of Wisconsin, indicates that the company proposes to increase the output of its ground wood plant at Port Arthur, Ont., to 100 tons per day. A paper mill unit capable of turning out 60 tons per day will also be constructed if a suitable timber limit can be secured in the Nipigon forest reserve. Mr. Youngman of Port Arthur, resident manager of the Thunder Bay Company, says that it is expedient that the limit be granted as soon as possible as it is the desire to proceed with the work immediately.

Word received in Toronto this week from the Spruce Falls Co., Ltd., of Neenah, Wis., states that the company's rossing plant at Kapuskasing, Ont., is now in operation. The company expects to get all its wood out of the water and rossed before the freeze-up. The construction work on the balance of the plant has been resumed and the company expects to have it completed and in operation before the end of the year.

F. W. Snyder, of the Warren Manufacturing Co., New York, was a caller on the Toronto paper trade during the past week.

The Ontario Government has accepted the recommendation of the Clark report as to the appointment of a Commissioner of Forests for the province but has not as yet named a man, although the subject has been taken up by the Cabinet with one or two forestry experts. The Premier's opinion is that the commissioner should be an experienced forestry engineer, but doubts are expressed as to the Government's ability to get a man at the salary offered.

Fred. W. Halls, of the Fred. W. Halls Paper Company, Limited, Adelaide Street, Toronto, is spending a couple of weeks' vacation at his summer home at Sturgeon Lake.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Products

A-3 Giant Grasses for Paper Making. Bull. Imp. Inst., xix, 174-189, (1921); **Chem. Abs.**, xvi, 1315, (April 20, 1922). -Grasses affording possibilities as paper making materials may be divided into three classes: the smaller, such as cereal straws and esparto, the heaviest, such as the bamboos; and an intermediate class of large-stemmed grasses. The article summarizes the work done on the third class and considers species belonging to 40 genera and to 9 tribes of the order Gramineae. -A. P. -C.

A-7 E-4 Sulphur and Sulphur Burners. H. E. WESTON. **Paper Ind.**, iv, 90-94, (April 1922). A general description of the mode of occurrence, method of extraction and chemistry of sulphur, and of flat, rotary, and vertical sulphur burners. -A. P. -C.

A-13 Fastness of Dyestuffs. PAUL DE GUEHERY. **Paper Ind.**, iii, 1382-1385, (Jan. 1922). A discussion of the fastness of dyestuffs (more particularly from a paper making point of view) to light, to washing, to alkali and acids, and to heat, with a description of the method of testing the light fastness. -A. P. -C.

A-14 Strength and Resistance of Paper. Breaking Length. E. ARNOULD. **Papier**, xxv, 209-212, (May 1922). A discussion of the factors affecting the tensile strength of paper, of the precautions to be taken in testing tensile strength by the Schopper tester, and of the strength tests to be applied to various grades of paper. -A. P. -C.

B. — Forestry

B-1 Paper Making Trees. CH. GROUD. **Papier**, xxv, 200-203, (May 1922). Brief description of various trees suitable for the manufacture of paper pulp. -A. P. -C.

B-5 Boom. Can. patent No. 189, 518, A. E. LOOSEN, Bathurst, N. B., Canada, April 8, 1919. -A. P. -C.

C. — Wood Preparing and Equipment

C-7 Feed Mechanism for Knife Barkers. Can. patent No. 190,176, WM. WAERN, Stockholm, Sweden, May 6, 1919. -A. P. -C.

C-0 P-1 Accident Hazards in the Wood Room. D.B. DAVIES, Northern Paper Mills, **Paper Ind.**, iv, 69-72, (April 1922). -Outline of the various dangers and hazards to be encountered in the wood room, with suggestions for eliminating or reducing them to a minimum. -A. P. -C.

D. — Groundwood Manufacturing and Equipment

D-4 The Improved Lead Burr. W. A. MUNRO. **Paper Ind.**, iii, 1391-1392, (Jan. 1922). -In this type of burr one end of the teeth is gradually tapered inward, leaving no abrupt shoulder at the end of the tooth, so that the rest of the tooth can freely enter and deepen the impression started by the tapered end without liability of breaking out the edges. This results in better patterning of the stone, double patterning or jumping the groove is very unlikely, the life of the burr is increased, and the quality and yield of groundwood are improved. (Compare next abstract.) -A. P. -C.

D-4 Pulp Stone Burr. T. W. WARD and B. F. MELLEN. Can. Patent 218, 743, May 23, 1922; U. S. A. Patent 1,419,785, June 13, 1922. The ends of the burr are tapered to such a degree as to allow the burr to travel across the face of the pulp stone without breaking out the edges of the impression so as to obtain a smooth print on the face of the stone. -A. P. -C.

D-0 Theoretical Cost of Grinding Wood. ROGER M. KINZLY. **Paper Ind.**, iii, 1519- 1521, (Feb. 1922). A discussion of the part played by pressure in the manufacture of groundwood at a profit or at a loss, showing the advantages of high pressure. -A. P. -C.

D-0 Elimination of Groundwood Mill Waste. RALPH K. PRATT. **Paper Ind.**, iii, 1673-1679, (March 1922). The author briefly describes conditions in an actual groundwood mill and makes the following suggestions from the point of view of (1) more economical operation, and (2) avoiding river pollution. (1) Cut as many 24″ blocks as possible from each log up to the last piece which should be cut into approximately equal pieces not less than 12 inches nor more than 25 inches (54 x 28 inch grinders are used). See if more than necessary is knife barked. Use white water throughout the stock circulating system. Install decker save-alls to save pulp in wet machine white water and surplus circulating water due to fluctuating conditions. (2) Run the barking drum without water and burn the waste under the boiler. Collect and burn bull screen and knotter screen tailings. Install drainer tanks or press rolls to remove water from fine screen tailings and burn these tailings. Have sufficient save-all equipment and make it and the white water system as reliable as possible to avoid shut downs. If the water from the save-all system is objectionable in the river, sluice it to the sea (4 miles distant in this case). The screen tailings could then go with the waste water. -A. P. -C.

D-0 H-5 Bleaching of Groundwood. Industria della Carta; Papeterie, xliv, 490-494, (June 10, 1922). Brief description of the method of bleaching groundwood with SO_2 and of the apparatus used, with mention of the chief precautions required. -A. P. -C.

E. — Acid Processes of Pulp Manufacture and Equipment

E-2 Determination of Soluble Sulphates as Sulphuric Acid in Sulphite Waste Liquor. E. C. SHERRARD and G. W. BLANCO, Forest Products Lab., Madison, Wis. **Paper Ind.**, iv, 241-244, (May 1922). Various methods proposed for the determination of sulphuric acid in the presence of sulphurous acid are reviewed, and the authors then propose a method consisting essentially in boiling 25 cc. of liquor with about 55 cc. of water and 25 cc. of 25 per cent. hydrochloric acid (equivalent to about 16 cc. of concentrated acid) in a 250-cc. Soxhlet flask under a reflux condenser till all SO_2 has been driven off (usually about 45 to 60 minutes), carbon dioxide being passed through the flask during the whole period of boiling. The solution is filtered and the sulphuric acid precipitated with barium chloride as usual. The top of the reflux condenser is connected to a Drexel wash bottle containing standard iodine solution, which is in turn connected to an Erlenmeyer containing standard thio-sulphate, so that the SO_2 evolved can be determined at the same time, if desired. It was found that on adding sulphuric acid to waste liquor, one part of SO_2 is liberated by 61 parts of sulphuric acid, that when approximately 200 parts of sulphuric acid are added to sulphite waste liquor 64.4 per cent. of the combined SO_2 is liberated, and that the residual combined is retained even in the presence of approximately 500 parts of sulphuric acid. -A. P. -C.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-4 Concentration of Liquors by Evaporation.

JAMES HOLMES. **Chem. Trade J.**, lxx, 1-3, (1922); **Chem. Abs.**, xvi, 1505, (May 10, 1922). General discussion of heat losses, typical quadruple effect performances, and improvements in design, with special reference to the paper maker. -A. P. -C.

G. — Pulp Treatment and Drying — Operation and Equipment

G-5 Continuous Automatic Washing of Wood Pulp. H. A. MORRISON. **Paper Ind.**, iii, 1375-1380, (Jan. 1922). The author, after briefly outlining the pan and diffuser methods of washing brown stock in soda and kraft mills respectively, describes a method of continuous and automatic washing of pulp by means of a rotary vacuum filter, which has been in successful operation on a commercial scale for some time. The most important requirement is that the stock should be fed to the filter at a consistency of not over 1 per cent., which is obtained by diluting the charge with filtered and undiluted liquor to a consistency of about 4 per cent., and then further diluting a small portion of this continuously to about 1 per cent. and feeding to the filter. The advantages claimed for the method are: (1) Dilution of evaporator feed liquor is reduced about 35 per cent. in a soda mill and about 20 per cent. in a kraft mill. (2) Wash room labor is decreased about 60 per cent. (3) Soda losses are at least 75 per cent less than in either pans or diffusers. (4) No fiber is lost in the evaporator liquor, and there are no shut downs for cleaning the evaporator tubes. (5) The evaporator liquor is maintained at a constant temperature and density, and is delivered to the evaporator at a uniform rate of flow. (6) Truly representative samples of washed pulp from which dependable soda loss figures are readily determined, are easily secured. (7) All operations are in full view and always subject to inspection. (8) The time that the pulp is in process is enormously decreased. (9) Thin sheet washing, positive contact of wash liquor and wash water through even distribution upon the pulp, results in a non-variable displacement of cook liquor throughout the mass of fiber treated. (10) Installation costs are less than for either diffuser or pan stations. (11) The capacity is extremely high, a filter with 100 square feet cloth area handles 25 to 30 tons in 24 hours. (12) The filters operate automatically, eliminating irregularities and losses due to personal equation. (13) Bleach consumption is reduced 1 per cent. or more in soda mills, and alum size correspondingly decreased in kraft pulp before coloring. Further possible uses for vacuum filters in the pulp industry are: save-alls, wet machines, and washing and de-inking waste paper. -A. P. -C.

K. — Paper Manufacturing and Equipment

K-7 Effects of Chemical Treatment and of Beating on Paper Pulps. E. ARNOULD. **Papier**, xxv, 193-196, (May 1922). A brief and general discussion. -A. P. -C.

K-12 The Wear of Machine Wires. R. MARX and E. MALLETT. **Paper Ind.**, iv, 65-69, (April 1922). Working on data obtained by J. Heess on a 65-inch machine making common wrapping, largely from dirty waste papers, over the course of several months, the authors show that the total production of the wire is proportional to $\frac{mv}{0.014hv + 0.28m,}$ in which **m** is the weight per unit area (in pounds D. C.), **h** is the total vacuum (in inches of mercury), and **v** is the velocity of the wire (in feet per minute). It is assumed that the wires wear out through normal causes. The relation between the drying effect of the suction boxes and the vacua maintained in them is briefly discussed. -A. P. -C.

K-4 Lost Technic of the Removal of Printer's Ink from News Print. PAUL DIERGART. **Chem. Ztg.**, xlvi, 41-42, (1922); **Chem Abs.**, xvi, 1505 (May 10, 1922). - Historical. -A. P. -C.

K-14 Calender. French Patent 535,863, CARL SCHURMANN. **Papier**, xxv, 205-207, (May 1922). Also U. S. A. patent 1,423,969, July 25, 1922. Instead of having large top and bottom iron rolls with intermediate alternate paper or cotton and iron rolls, the large top and bottom rolls are of cotton or paper; the axes of the rolls instead of being directly above one another are slightly staggered, and the stack is driven from the second or fourth roll from the bottom instead of the first or third. -A. P. -C.

K-14 K-23 Machine for Cutting, and Interfolding Sheets of Cigarette Paper. French Patent 536, 308, A. GRIMONPREZ and PETIT, Feb. 9, 1922. **Papier**, xxv, 207-209, (May 1922). -A. P. -C.

K-14 The Small Paper Mill's Finishing Room and its Auxiliaries. H. M. GRASSELT. **Paper Ind.**, iv, 80-83, (April 1922). Hints on means for most efficient operation. -A. P. -C.

K-15 Heat Economies in the News Print Industry. G. HAAS. **Chem. Ztg.**, xlv, 1210-1212, (1921); **Chem. Abs.**, xvi, 1666, (May 20, 1922). The author discusses the possibility of replacing the 10 per cent. of chemical pulp in news print (which is prepared from pine) by the so-called brown pulp (prepared from Scots pine). Since the yield is larger there would be a considerable saving in timber and also in steam used in the preparation of the amount of chemical pulp used at present. The annual saving in Germany is estimated at 500,000 solid cords of wood. Since the preparation of chemical pulp from a cord of wood requires 170 kilos of coal, the fuel saving would be very large. Digesters for the preparation of pulp are discussed. -A. P. -C.

K-0 Effect of Seasonal Temperature on Paper Making. W. A. WYLDE. **Paper Ind.**, iii, 1506-1509, (Feb. 1922). The main troubles encountered in paper making due to seasonal changes in temperature are: the water may be too hot in summer, causing the stock to be too free, or it may be too cold in winter, causing the stock to be too slow. Either of these conditions can seriously affect production. The dryness of the air in winter may cause curling at the edges or cockling of the sheet, rendering calendering almost impossible or seriously interfering with loft drying. These troubles can be overcome by installing a ventilating system which furnishes air at a definite humidity and temperature to the finishing room, such a system operating satisfactorily except on the hottest days in summer. Excessive dryness of the air in winter and humidity in summer change the moisture content of the paper, causing trouble in the finishing room and also at the shipping end due to overweight or shortage when the paper reaches the customer. -A. P. -C.

L. — Articles Produced from Pulp and Paper

L-4 Method of Making Tapered Paper Containers. U. S. Patent 1, 413, 251, M. D. BARON assignor to WITTEMAN BROTHERS, April 18, 1922. Tapered articles are made by winding a straight web of paper, to which adhesive has been applied, on a tapered mandrel; but, either before or during drying, tucks or folds are formed in the web at the small diameter of the mandrel to compensate for the decrease in diameter. -A. P. -C.

L-4 Cardboard Carton. Can. Patent 214, 474, DUNCAN LITHOGRAPHING CO., LTD., assignee of F. B. CLOSE, Nov. 29, 1921. -A. P. -C.

UNITED STATES NOTES

The American paper industry, to a greater degree than ever, is turning its attention to the Southern pine forests as a source of raw material for paper mills located in the North, according to Oliver M. Porter, secretary of the woodlands section of the American Paper and Pulp Association. The possibility of more economical practices in forestry and the more rapid production of a timber crop in the Southern States is responsible for the condition, he asserts.

The monthly review of the paper industry shows orders and production are now above the normal level. ''There is every indication,'' the summary states, ''that the fall will show a continuation of the improvement in demand. The depletion of the country's coal reserve has greatly increased the cost of fuel of many mills and is adding materially to the cost of paper. The labor situation has changed very much during the last few months. There are now men looking for employment and yet wages have been advanced in some directions.''

With the outlook for the Fall trade more promising than it has been in several years, paper mills—particularly a number located in the Northern and Middle West,—are facing serious difficulties due to a lack of fuel. There have been several actual shutdowns, and, with no relief in sight, it is probable many mills will have to curtail during the next few weeks. The tissue mills of the E.T. Garrett Co., and of Edwin Garrett near Philadelphia, have been closed indefinitely due to the coal shortage. The Crystal Paper Company's mill at Excello, near Middletown, Ohio, has had to suspend activities owing to lack of fuel. The situation in the Miami Valley generally is acute, and despite the settlement of the trouble with the bituminous miners, the best that is hoped for is that a judicious rationing of remaining reserve stocks of coal may help some of the mills to pull through the most critical period. In the Fox River Valley, Wis., several mills are quite well supplied, but quite a number of the plants are running on a ''hand to mouth'' basis. Some mills have only a supply sufficient for a day or two at most, and in some instances efforts are being made to keep mills operating by burning large quantities of wood. The only reason more mills have not closed altogether is because they have somehow contrived to keep supplied with their fuel requirements on a day to day delivery arrangement.

The annual exploration trip of the sophomore class, New York State College of Forestry, now in session at its summer camp, Cranberry Lake, N. Y., was held early this month. This hike took sixty students practically across the Adirondacks twice. It was organized by Al Cline, class of 1921. Prof. Fenska, Prof. Pritchard, and Prof. Belyea commanded the three companies into which the class was divided. Two of the class members who are familiar with the trails acted as guides. The experience gained in this annual summer camp event is regarded as valuable in that the men are thrown on their own resources to a large extent in taking care of themselves in the woods.

The largest compact body of yellow pine timber owned by the Federal Government, a tract of 550,000 acres in Eastern Oregon, is to be opened for sale and development, the Forest Service has announced. This is in pursuance of ''the Federal policy of putting the forests of the United States to their highest use instead of locking up valuable timber resources so that they are of no value to the American people.'' Forest officials have declared, however, that the land is to be sold for development under Government regulations, so framed as to ''insure continuous production for all time.'' The tract is on the watershed of the Silvies River, in the Malheur National Forest, and is said to contain 7,000,000 feet of mature timber.

Denver, Colorado, has been selected as a site for the new plant of the Myers Pulp and Paper Company. Work is now in progress on a half million dollar mill which, when completed, will give employment to a large force of workers. The site of the plant is north of Denver. The twenty acre area will include a box-board factory. Board and contained stock, wall board and sheeting papers will be the principal products. The factory will open also a market for the sale of low grade waste paper in Denver. The company has timber holdings along the line of the Moffat road in the Rockies. It expects to manufacture products from the wood pulp taken from these limits. The capacity of the plant at the start will be about 15,000 tons of paper products annually. With ultimate additions, it is expected that an annual capacity of 30,000 will be reached. Charles B. Myers, of Chicago, is president of the company.

Frederick Bertuch, well known paper manufacturer, who for many years headed the American Pulp and Paper Association, died August 18 at his home, Babylon, L. I., after a protracted illness.

A company fire department, equipped to cope with any fire short of a general conflagration, is one of the features that has gradually been installed in the plant of the Kalamazoo Vegetable Parchment Company. The latest addition to the equipment was a Reo speed wagon hose and chemical truck.

The future of the newsprint industry in the United States is discussed in the September issue of *Commerce Monthly*, the magazine of the National Bank of Commerce in New York. Reforestation of cutover and waste areas near the paper mills is recommended as being the most feasible plan for protecting the sources of raw material for the newsprint industry. Production of newsprint has been at a standstill for some years, the article states, and the economic effect of having to ship raw material over long distances to the mills is beginning to be felt. The principal paper mills are located in the East, and the bank's magazine estimates that the present supplies of pulp wood will be exhausted within twenty or thirty years. But by the extensive practice of reforestration, it is urged, the cutover areas near the the mills could within thirty or forty years be made to yield more than the present consumption requirements of the United States. It is pointed out that while more than eleven and a quarter billion copies of daily newspapers are now printed annually in the United States, only two newsprint plants have been established in the country since 1909. Canada, on the other hand, has trebled her newsprint production in recent years.

Walter Meigs, Vice-President of the Lincoln Mills Company, Limited, Merritton, spent several days at the Toronto office of the company on King Street, during the past week.

British Trade News

(From our London Correspondent)

London, Aug., 14, 1922.—I was present the other day at the distribution of prizes at the close of the term in Dulwich College — one of the famous colleges in London for preparing youths for the Universities—and amongst those occupying seats on the platform was Sir Evan Spicer, a member of the well-known firm of London papermakers. During the reading of the annual report by the Master special thanks was accorded to Sir Evan and Lady Spicer for a valuable gift given to the college, in the shape of a scholarship, in memory of their son, Eric, who lost his life while serving during the war in France. The scholarship is intended to help a student reading for ecclesiastical tripos at Cambridge University. This is one of the many instances in which British papermakers are striving to help keep alive the memory of their hero sons and at the same time help those less fortunate in life in their education. It is a brilliant idea, well worthy of emulation in Canada. Shackleton, the great explorer, was also an old Dulwich College boy and it will be recollected that the *Pulp and Paper Magazine* recorded the fact that Sir Fred. Becker, the Canadian Pulp pioneer in London, along with Mr. J. Q. Rowett, helped in a large degree to finance the last expedition during which Shackleton died. Mr. Rowett has now decided to present the boat Shackleton used in his dash to Elephant Island to Dulwich College and arrangements are being made for housing it, so that it will remind generations to come of one of the most notable espisodes in the career of one of the greatest explorers. The dash to Elephant Island forms one of the finest chapters in history for bravery and self-sacrifice for others.

A Gentle Hint

British papermakers always like to advertise the products of their mills, notwithstanding the fact that some say their "makes" prove a sufficient advertisement for them. However, the weekly newspapers and the dailies receive a neat little booklet of specimens of the papers made by a particular mill, with a request to the Editor that he should write a "few lines" expressing his views on the samples just in the same way as a newly published book would be dealt with. In this way the mill and its products get publicity, which, in turn, commands inquiries. Printing and publishing houses are always kept well supplied with the latest samples of paper and cardboards. The best and most up-to-date mills in England adopt this scheme.

Lord Northcliffe Dead

I am sorry to announce that Lord Northcliffe is dead. Prayers were asked in all churches for his recovery during the past week, at the request of his relations, but he passed away on August 14.

The *Outlook* says of him : "It is enough that in not much more than a quarter of a century he built up out of nothing but his own brains a gigantic organization which stretches to every corner of the globe, which is served by all kinds of men, from the daintiest of mincing editors in society in London to the roughest working hand in Canada, which provides reading matter for every class from the mill-girl to the millionaire connoisseur."

The Pulp Situation

The quiet conditions prevailing in the paper industry are not making buyers anxious to go beyond their requirements. Markets, however, are firm but prices remained unchanged this last couple of weeks.

Since the Chicoutimi fire surveys have been made of possible future supplies and if one is to believe all the news that reaches London from Sweden and Norway it may be assumed that by October 31 next the stock over from 1921, added to this year's saleable stock, of chemical and groundwood, will become exhausted. Nearly everyone who visits the Scandinavians comes home with different views. But it is safe to say Scandinavians have good supplies, but they want a better market than prevails at present in England.

Between January and March, Norway exported 62,239 tons of groundwood, compared with 58,402 tons for the same months in 1921 and 108,265 tons in 1920. The chemical pulp exports reached 41,171 tons as against 67,241 tons in 1920. The exact figures for 1921 are not available yet.

Sweden's shipments were: January-April, 30,726 tons of groundwood which is double the quantity sent in 1921 and 20,000 odd tons below the 1920 shipments for the same period. Chemical pulps were shipped to the extent of 77,255 tons, as against 27,453 tons in 1921 and 154,929 tons in 1920.

Norwegians say they have 60,000 tons of groundwood to sell and the Swedes estimate their quantity at 30,000. Whether these statements are made to force prices up, or not, it is difficult to see, but 60,000 tons of groundwood at this time of the year on hand in Norway is surely a small quantity. Of course, it excludes the stock to be carried over for 1923. At the same time Norwegian writers are announcing "large sales of Norwegian groundwood just closed"—and "prices are up."

Good shipments of pulp continue to reach England from Canada.

Good for Newsprint

The competition amongst the daily and weekly newspapers in the United Kingdom should eventually prove beneficial for sellers and producers of newsprint. The London *Evening News* claims to have the "largest evening net sale in the world", the *Daily Mail* sells 1½ million copies in a day, the *Daily Chronicle* and the *Express* also sell over one million copies each per day. In the provinces there are also papers with enormous circulations and the same may be said of Wales and Scotland. Newsprint has to be found for these increased circulations, which are not bogus, but genuine.

Unfortunately the provincial newspapers have not yet got over the printers' strike, which gave newsprint sellers a temporary set back, but in normal times the importance of the daily consumption is becoming more and more significant.

China Clay

The China clay industry is making a rapid recovery since the termination of war. Since January to June 30, 331,115 tons represents the output and the volume of trade represents 60 p.c. of the best pre-war figure. It is reported that the Cornish Kaolin Ltd., sell on an average 1,000 tons a month with a good margin of profit. A second "dry" will be shortly finished and the output will be doubled.

The Interlake Tissue Mills, have an enlarged and improved display of their products at the National Exhibition in Toronto this year. The company secured booth No. 44 in the manufacturers' building and have on display and attractively arranged, samples of their many specialty lines of paper towels, napkins, toilets, etc. The exhibit is in charge of John Berhalter, of the Toronto office, who is assisted by F. J. Stewart and William Innes. The display is attracting considerable attention by those interested in the paper trade and others.

CANADIANS AT CHEMICAL EXPOSITION

The great raw material supplies of Canada, particularly the wood chemicals and products of the forests, together with the water power as yet undeveloped in these industries, will be the subjects for the Canadian exhibits at the Eighth National Exposition of Chemical Industries which will be held during the week of September 11-16 at the Grand Central Palace, New York. The vast raw material for the pulp and paper industries of the Dominion will play an important part in the exhibits of the Canadian Section. Among the exhibitors from Canada who have contracted for space at the 1922 Exposition thus far, are included the Department of the Interior of Canada with exhibits by the Forestry Service, Water Power Branch, and the Bureau of Statistics. The Ontario Department of Mines will also be represented as well as the British-America Nickel Company and the International Nickel Company.

While the Canadian exhibitors will exploit the vast raw materials of the provinces and illustrate the opportunities for American capital in Canada, the chemical and chemical equipment industries of the United States will have on display the products which are in turn used by the consuming industries of the Dominion. Every conceivable type and grade of chemical product for the pulp and paper industry will be shown by the American chemical manufacturers who will display their wares at the Exposition. As for chemical machinery, everything from the largest crushing mill to the most delicate of precision instruments will be shown. Special sections will be given over to various phases of industry. The Power Section with its combustion efficiency devices for fuel conservation and general combustion problems will be one of the largest at the Exposition. A section given over to fire fighting apparatus of the latest approved types for chemical and other special uses, will also show devices for the prevention of dust explosions in mills, grain elevators, mines, and factories. Photographic materials, especially the use of photomiscroscopic work in the industries with particular reference to the pulp and paper fields, will be given special attention in a section where the booth of the Technical Photographic and Microscopical Society, the members of which have done notable work in industrial photography, will be one of the leading attractions.

Among the speakers who are definitely scheduled thus far for the meetings which will be held in the special auditorium in the Grand Central Palace as part of the Exposition, are Herbert Hoover, Secretary of Commerce of the United States, who will speak on "Standardization and What It Can Do for the American Chemical Industry" and Wayne B. Wheeler, general counsel for the Anti-Saloon League on "The Attitude of the Anti-Saloon League Toward Industrial Alcohol."

The Technical Association of the Pulp and Paper Industry, which will meet in conjunction with the Chemical Exposition, has announced an attractive list of speakers. The program will include the following:

"Safety and Efficiency Appliances for the Boiler Plant" by W. C. Edge of the Paul B. Huyette Co.

"Primbey and Tibbitts Proportioning and Metering System for Paper Stock" by E. J. Trimbey of the Trimbey Machine Works.

"Rotary Filters for Washing of Paper Pulp and for Filtering and Washing Caustic Lime Mud" (Illustrated) by Geo. D. Dickey of the Industrial Filtration Corp."

"Efficiencies and Economies in Washing Black Liquor for Digested Soda and Sulphite Stock" by R. G. Walker of the Oliver Continuous Filter Co.

"The Merco Nordstrom Plug Valve" by L. D. Mills of the Merrill Co.

"Testing Colored Materials for Fastness to Light" by H. S. Thayer of the Atlas Electric Devices Co.

"Instruments for Promoting Efficiency in the Paper Mill" by A. E. Campbell of the Schaeffer and Budenberg Mfg. Co.

"The Carbon Dioxide Record of Combustion Efficiency" by C. C. Phelps of the Uehling Instrument Co.

"Steel Belts and their Application to the Solution of Conveying Problems" by Harry Carlson of Sandvik Steel, Inc.

"The Scott Evaporator as Used in the Pulp Mill for Recovering Soda from Spent Liquors" by H. Austin of Ernest Scott and Co.

"Dust Protection with Particular Reference to the Use of Respirators" by F. M. Rockwell of Willson Goggles, Inc.

"Continuous Causticizing with Lime Recovery and Reuse" by W. D. Mount of the Glamorgan Pipe and Foundry Co.

"The Grinnell Dryer Applied to Wall-Paper and Coated Paper" by Jerome D. Stein of the Grinnell Company.

"The V-Notch Meter and Its Application to the Paper Mill" by L. D. Chase of Yarnall-Waring Co.

"The Proper Selection and Application of Dyes for Paper" by L. Mann, of the National Aniline and Chemical Co.

The program of the Technical Photographic and Microscopical Society will have many interests for the Pulp and Paper man: it is as follows:

"Photomicrography in Pulp and Paper Research Problems", Miss Eloise Gerry and Dr. E. M. Diemer, Forest Products Laboratory, Madison, Wis.

"The Photomicroscopy of Paint and Rubber Pigments," Henry Green of the New Jersey Zinc Co. Palmerton, Pa.

"The Finishing of Motion Picture Films", by Dominic S. Mungillo, Craftsmen's Film Laboratory, New York.

"Mechanics of Motion Picture Apparatus", by Clarence W. Gibbs, Victor Anitmatograph Co., New York.

"The Motion Picture as an Aid to Industry" by Alfred B. Hitchins, Ph.D. F.C.S., Director Ansco Research Laboratory, Ansco Company, Binghamton, N. Y.

"Microscopy in Leather Tanning" by Guido E. Daub, (A. F. Gallun Sons Co. Milwaukee, Wis.)

"Use of the Microscope in the Textile School" by Albert H. Grimshaw, Textile School, New Bedford, Mass.

In his report on Ontario forestry matters, Dr. Judson F. Clark, forestry expert, condemns the Doyle rule and states that he is convinced that the outstanding need of the present, and for much time that is past, is the placing of the Provincial forests in the hands of a competent forest engineer under the Minister of Lands and Forests. This job was offered Dr. Clark by the Ontario Government recently at a salary of $10,000 a year, but he declined it. Dealing with the Doyle rule, or any other product rule he says: "The forest administration of the province sells wood, and it should not in the measurement of that wood concern its mind with what the purchaser may do with it, after he has bought it and paid for it. The province should sell its customers just so much wood—so many cubic feet of wood—and let the buyer saw it into feet board measure, with a good or bad saw or a good or bad sawyer, or let him pulp it, or burn it for fuel. Why, indeed, should the forest administration be concerned if a customer should convert the wood, which is sold and paid for, into sugar and eat it, or distil it for moonshine and drink it?"

The Markets

CANADIAN TRADE CONDITIONS

Montreal, August 29. — The paper trade has picked up again, a foretaste of those better times which the jobbing houses are expecting. Part of the recent slackness was due to the dullness in the printing trade, but now that the fall is approaching there is likely to be a distinct revival in that industry. The jobbers state that orders are coming in more satisfactorily, while representatives of the mills report that their business is broadening. Reports from representatives of manufacturers whose lines may be said to be indices of general trade are to the effect that the orders are on the upgrade, so it looks as if commerce is improving. Besides that prices in one or two sections of the paper trade—boards and felts—are advancing.

The labour troubles here and across the border have been disturbing elements. Some American firms doing business with Canada have withdrawn their prices, presumably owing to the increased cost of production due mainly to high priced coal. Some of the Canadian mills have been hit by the shortness of the coal supply.

The newsprint position is without any particular development. The main subject of discussion relates to prices. In our last issue reference was made to a special bulletin issued by the American Newspaper Publishers' Association advising caution in the use of newsprint. This has been followed by a meeting of the Association in New York at which the entire situation as regards prices, consumption, and production was discussed. Naturally it was held that there is no justification for a further advance in contract prices, and it was intimated that should this occur, prompt measures would be taken to very materially reduce consumption. Buyers of any commodity, of course, assume an attitude dictated by their interests, and it was only to be expected that the publishers would present a bold front against advancing quotations. This attitude would not necessarily exert a predominating influence where there was a very strong case for putting up prices. At the same time there is an undoubted danger of a considerable diminution in the demand if prices are placed on a level where the increased consumption becomes unremunerative. Many leaders of the Canadian industry believe that we shall see a further reduction in the cost of production. The high-priced wood is being gradually absorbed, and economies in working effected. There is in fact nothing in the situation at the moment to lead to the expectation that prices will be advanced to any extent—if at all—for the first part of the coming year. This statement must, however, be qualified. The newsprint position is subject to sudden changes, and it is possible that an advance may be forced. As we have before pointed out, the decision will have to be based on then existing conditions. Much of this talk of higher prices and increased profits comes from Stock exchange manipulators and not from leaders of the industry.

There has been a revival of the report that a syndicate had secured control of the production of Scandinavian newsprint mills intended for the American market; the new report includes Germany in the syndicate. It looks, on the face of it, as if this is only a rehashed version of the old story, with which the name of Mr. Steele, former manager of the Canadian Export Paper Company Limited, was erronously connected.

Writings, bonds and book papers are in moderate request, with prices holding firm. Tissues and toilets are in much more urgent call, particularly tissues.

Boards are active. Prices have been advanced about 10 per cent all along the line, and it would not be surprising if another rise takes place at an early date. Manufacturers feel that even with the new list now in force the prices do not meet the full measure of higher production costs.

Kraft papers show some improvement. The Wayagamack Pulp and Company's mill is now working near capacity.

Roofing papers are to be advanced early in September. The main cause is the rising rag market, the prices of $24 to $25 in Montreal and Toronto showing an appreciable gain. Naturally this strengthening of rags is reflected in roofing papers, which have been freely purchased this year owing to the building boom.

The pulp market is in better shape. Pulp of all kinds is being more freely exported to the States, this being especially true of bleached sulphite. Canadian mills are working towards capacity, those making bleached being near full production. Groundwood is in larger request, with many more inquiries to hand, and with prices showing a hardening tendency.

There is very little doing in pulpwood. Quotations are nominal.

Toronto Topics

Toronto, August 26. — Whether permanent or not, the fact remains that the past week has shown considerably increased activity in the Ontario paper trade, particularly as regards the jobbing end of the business. Following some weeks or real dullness there were evidences during the past ten days of a coming revival in the paper trade generally, with a libral consumption of paper by the printing trades and commercial and industrial concerns. There was distinct evidence of an improved condition in the printing trade, which has been going through a very dull season, and it begins to look as if a revival was setting in amongst the printing concerns. One big Toronto establishment has so far regained its old-time volume of business as to be under the necessity of putting on a night staff, while others report that orders are beginning to come in again after a period of extreme dullness. This is having a favorable effect on the paper trade. One big jobber reported this week that orders for bonds and writings were beginning to come in ton lots, which si a distinct change from the hand-to-mouth buying that has been going on for some weeks. Prices in most lines of paper are holding firm and advances have been made in some instances. In addition to the rise in book papers reported last week, this week saw an increase in boards and blanks, two board mills having announced a ten per cent addition to their old price-list. Owing to the fairly active condition of the paper box making industry the board mills are running to full capacity and are meeting with a good demand for their product. Book and coated paper mills are also running to full capacity and have orders ahead, while lightweight paper and wrapping paper manufacturers are tuning out satisfactory tonnages of their lines. All lines of pulp are active, with no changes in prices and enquiries are being made for men in Toronto by pulpwood contractors, which means that there should be a good cut for the coming season. It is stated that at least a couple of thousand men have left for the bush and five thousand more will go next month if they can be secured. One leading contracting firm in Toronto has completed the shipping out of over forty thousand cords of pulp wood from Northern Ontario which has been in progress during the past season, most of it being composed of poplar. It is predicted that pulpwood will stiffen in price as the demand for newsprint continues, which it seems likely will be the case.

Glassine and grease proof. — In common with other similar lines glassine is meeting with rather poor demand at the present time. It is being sold to jobbers at 14c f.o.b. mill, for unbleached, and 15c for full bleached on 25-lb. basis, with one cent additional for 20-lb. basis. Greaseproof is selling at 12c for unbleached and 14c for unbleached, f.o.b. mill. The market is considerably unsettled, due, to some extent, to quotations being sent in from Sweden which are underbidding the Ontario product. As far as can be learned none of the Ontario buyers have closed contracts with the foreign manufacturers, but the fact that lower quotations are coming in from overseas has caused reluctance to buy on this side. It appears to be the general impression that the Ontario price will come down a couple of cents a pound to off-set the foreign market.

Box Board. — A general increase in the price of all grades of board was forshadowed this week when at least two of the Canadian manufacturing mills jumped their prices by ten per cent. That future prices are somewhat uncertain is indicated by the fact that several of the mills are now only accepting orders subject to prices prevailing at date of shipping. The mills, for the most part, are busy and the paper box manufacturers in Toronto and district, which are running close to capacity, are absorbing sizeable quantities of board.

Blanks. — Local paper jobbers are revising their price lists on Bristols in accordance with the general advance of ten per cent on all grades of blanks in the United States. Blanks that were selling at $1.55 per one hundred sheets, 3 ply, are now selling at $1.70 and other grades in proportion. There is a fair business in Bristols and most lines of blanks are keeping up well.

Wrappings. — Wrapping papers are in somewhat light demand from the jobbers' standpoint although the mills have sufficient orders to keep them running for a time. The following prices prevail No. 1 kraft, A. jobbers, $8\frac{1}{4}$c; B. jobbers, $8\frac{1}{2}$c; small jobbers $8\frac{3}{4}$c; B. manila, $5\frac{1}{2}$c; No 1 manila, $7\frac{1}{4}$c; fibre manila, $7\frac{1}{4}$c; T. manila, $5\frac{1}{4}$c.

Paper bags. — The paper bag trade keeps up fairly well although the demand is not as strong as the trade would like. Prices remain firm with the following quotations prevailing: premier, light manila, less 60-$7\frac{1}{2}$-5 per cent; regal, heavy, manila, less 60 p.c.; atlas, light kraft, less 60-$7\frac{1}{2}$ p.c.; stag. heavy kraft, less 50-10 p.c.; white bond, less $17\frac{1}{2}$-10 p.c.

Tissues and Toilets. — Ontario mills manufacturing tissues, toilets, towels and napkins are busy and report a ready sale for their products, with a general feeling of confidence that still better business is on the way. Buying has been considerably stimulated during the past week and prices are holding firm with rather an upward tendency. The following prices prevail: No. 2 manila, 20 x 30, 80c; 24 x 36, $1.05; natural white, 90c and $1.25; No. 1 primer white, $1.10 and 55c.; white sulphite, $1.00 and $1.40. Less $32\frac{1}{2}$. Towels are quoted at 13.75 for I. X. L. roll, less 22 p.c.

Book and coated book. — Book paper and coated paper mills are fairly busy with many of them having orders ahead, although the jobbing trade in these lines is somewhat dull. Coated paper mills are running to full capacity, that of the Provincial Paper Mills have resumed full operation after a short period of light running. The outlook for fall trade is said to be exceedingly bright.

Bonds and writings. — There has been a slight picking up in trade in these lines during the past week. Several ton lots have been sold in the city during the past few days of both bonds and writings and there are indications that the printing trade is coming back somewhat. Prices in both lines of paper are unchanged.

Rag and Paper stock. — All grades in rag and paper stock are in good demand and prices remain firm for the most part, although No. 1 mixed papers are down from 80 to 70 cents. No. 1 white short cuttings are down half a cent, to 11 cents and miscellaneous stock is up ten cents. No. 1 selling at 75 cents now. No. 2 misc. is quoted at 60 cents. In other lines of paper and rag stock and ropes and bagging, last weeks' prices prevail.

NEW YORK MARKETS

New York, August 26—(Special Correspondence) —The paper industry continues to be characterized by pronounced activity. Demand for the various kinds of paper is constantly broadening, and the market situation as a whole is daily taking on a healthier tone as consumers increase their buying and as manufacturers are provided with a wider outlet for their product. Reports coming from numerous corners of the trade express much gratification over the prevailing situation. Consumption of paper is gradually mounting, and there seems every reason to believe that as the fall draws nearer demand will steadily increase. General business conditions are improving in such a manner that it is but logical to look for a larger consumption of paper, and therefore for paper manufacturers to obtain a greater volume of business.

The tendency of prices is still toward higher levels. What is probably the most important development in this connection this week has been the slight rise in prices on some grades of book paper. A good many manufacturers have advanced their quotations on coated book about a quarter of a cent per pound, which means that where this kind of book paper was available up to a few days ago at as low as 8.50 cents a pound f.o.b. New York, about the minimum price now quoted is 8.75 cents, while a majority of producers ask substantially higher than this price, particularly on high-grade coated book paper. This increase in the price of coated book is the first advance in book papers in a long time. In fact, the trend of quotations on this commodity has been downward for such a lengthy period that many in the trade were beginning to wonder whether book papers would ever move in any other direction in price. The advance is a reflection of the increasing activity in the book paper market. Demand is on the rise, as publishers' requirements expand, and mills are securing a greater volume of orders than in many months. Book papers are one of the best barometers of general business conditions in the paper field. When book paper is in demand, it is an apt sign that much activity exists in other lines of business, for the reason that the bulk of book paper consumed goes into magazines and trade periodicals, whose advertising depends on the situation prevailing in the respective fields they cover or cater to, and the consumption of book paper being gauged by the amount of advertising these publications carry. The fact that there is such improvement in the demand for book paper consequently can be viewed as indicating general business activity.

The newsprint market is firm. Demand shows no let-up, and according to reports, mills are shipping out just as much paper as in recent weeks. Ordinarily it is about this time of the year when consumption of print paper commences to increase. If the usual thing happens this year there is little doubt that newsprint mills will be hard pressed to fill the requirements of publishers because most newsprint manufacturers have the great bulk of their output for the remainder of the year contracted for and if the transient demand expands in its customary way a shortage of print paper may ensue; that is, a shortage insofar as transient buyers are concerned. Many in the trade are now speculating as to whether there will be another rise in newsprint before the year is out.

Boards continue in active demand and strong in price. Not only are manufacturers favored with an exceptionally good call for supplies from consumers in justification of the higher prices quoted, but the sharp advances in raw material have compelled board producers to mark up prices on their product. Old waste paper, which is the principal commodity going into the manufacture of most kinds of box board, has jumped more than a hundred per cent in cost within the last several months.

There is a steady call for fine papers, though it is stated that consumers are still ordering bonds and ledgers in amounts to cover immediate requirements. Prices are steady and display a strengthening tendency. Coarse papers are in as good demand as could be expected for the midsummer, and quotations are holding.

Ground Wood —A consistently good demand is reported prevailing for ground wood. Consumers are said to be absorbing supplies in what is considered a little better than average tonnage for this period of the year, and prospects are for a good fall business in pulp. Prices are firm, and many in the trade expect to see mechanical pulp sell at considerably higher prices within the next several months. It is generally acknowledged that grinders have been favored with excellent water conditions in recent months and that the production therefore has been heavy, but it is also argued that consumption has been larger this summer than ordinarily, with the result that producers have nothing more than normal stocks of pulp on hand. About $31 or $32 a ton at grinding plants is the price basis quoted by domestic manufacturers on spruce ground wood for prompt shipment, while pulp brought down from Nova Scotia is selling at about these figures, or slightly higher, ex dock New York, Philadelphia or Baltimore.

Chemical Pulp —Sulphite is in steady demand and prices evince a stiffening tendency. No changes of note have been recorded this week, but a majority in the trade—at least those on the selling side—look for appreciable advancement during September, when it is expected consumers will come more actively in view as buyers than they have been in recent weeks. Moreover, it is contended that the advancing position of pulp at primary sources in Europe will ultimately lead to higher prices here, and importers are said to be more cautious about entering commitments than they have been in a long time. Sales of news grade sulphite, involving fairly large tonnage, have been noted to dealers at around 3.50 cents a pound at pulp mills, which apparently means that the cost of this pulp to consumers must be in the neighborhood of about 2.60 cents at shipping points. Bleached sulphite is firm in price, and kraft exhibits more quotable strength than in quite a while, the latter grade of pulp moving freely to board mills.

Paper Stock —The old paper market continues active, and prices have reached new high levels during the week for the present upward swing of values.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

TRADE MARK

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AND

Finnish Wood Pulp Union
Helsinfors, Finland

With the Woodsmen

PROFESSIONAL ENGINEERING IN THE B. C. LOGGING INDUSTRY *

T. W. Fairhurst, A.M.E.I.C.
Sales Engineer, Vancouver Machinery Depot, Limited.

The remarkable advances made in recent years in the magnitude of logging operations in British Columbia have been coincident with the increasing use of professional engineering services in the woods, and the further scientific development of this primary natural industry of the Province is now dependent entirely upon the services of professional engineers, both civil and mechanical, as well as the newly developed forestry engineer who is intended to be a judiciously specialized combination of both.

Historical References to Primitive Hand Logging

Thirty years ago, in the very early days of logging, the operation was extremely primitive. Only timber actually on tide water was selected for cutting, owing to the ease with which it could be dropped into salt-water for towage to mills. This simple programme was carried out mainly by hand logging, the only appliances necessary being the hand cutting tools and a selection of jacks which, attached to stumps or trees, were used to shift the logs about.

Skid roads were laid to tide water without any attempt at economical location, other than picking out an easy path with the eye, and down these skid roads the logs were slid with the aid, in some cases, of horse or bull teams. This method of production was very slow and limited, but comparatively cheap.

Some few years later enterprising operators, who were by this time getting quite a few hundred feet in-shore from tide water, began the use of primitive mechanical aids, such as the single drum horizontal steam spools, supplied with steam from small low pressure wood fired boilers; the haulback, or return line, being hauled out for a new load by a horse. This was a slight improvement over purely hand logging and was quickly followed by improved machinery which in a very few years had developed as far as the simple yarding engine with mainline and haulback drums, and supplied by a properly designed boiler, all mounted on braced timber skids, and capable of being moved by its own power to fresh locations as required. Logs yarded to a central point by this means were sent down to tide water by means of simple roading engines handling the long haul to the sea by pulling or lowering trains of logs down the previously described roughly located skid roads.

Advent of the Railroad as an Aid to Log-Transportation

Following closely on this phase came the railroad. Seashore limits became rapidly exhausted; the logger was now boring inland and was beginning to measure his haul to tide water in miles instead of feet. Here begins the advent of the civil engineer into the logging industry. Having yarded the logs to a central point the operator was faced with haulage to the sea. The old eye-sight method of road location was no longer feasible and the engineer proper was called in and the railroad was located and built. In the early days this was of very light construction, probably not more than thirty-pound rails being used, and, in order to accommodate the capacity of the ten- to twenty-ton straight connected locomotives then in use, no grade over three percent could be allowed.

On the heels of the last phase came the geared locomotive, capable of handling grades up to eight percent, and thus shorter cuts to any given point were made possible and logging locations hitherto inaccessable were rendered accessible.

The advent of railroad operation resulted in yet another new departure, the steam loading donkey. Throughout the days of skidding operations no special bodily lifting of the logs had been necessary, but to load the centrally yarded logs on cars necessitated the adoption of other means. Accordingly the crotch line loading system was introduced, consisting of a single line working through a tree-mounted block, but forked out to hooked points so as to grab each end of the log; the single line being worked by attachment to a loading drum on the yarding engine or by a separate simple loading engine.

Intensive Mechanical Development

Here begins a long period of intensive development of the mechanical aids to log-getting; a fierce period of technical competition during which the ingenuity and resource of the mechanical engineering designer has been taxed to the utmost, until to-day no location is impossible of operation.

First in this period came the two-speed yarder with high speed on low power for straight unobstructed hills and, per contra, lower speed with higher power for worrying the logs out of obstacles. This class of engine resulted in the getting of more logs per day than the simple loading engine could handle. Accordingly the duplex loading engine was brought in; this machine having two sets of engines, instead of one, handled the log with one engine acting on each end, each engine having its own line, each log therefore being loaded just twice as quickly as by the simple engine, which latter had to have its logs swung and adjusted by hand.

Then came the aerial skidders with enormously powerful engines by which the logs were brought in on air lines instead of being yarded along the ground by the old method, which often resulted in serious damage to logs through bucking ground obstacles. Larger duplex loading engines were required and brought into use, with the result that, instead of the old fashioned donkey of twenty-five years ago reaching out for about 1,000 feet and getting in perhaps 30,000 feet a day, we have the complicated monster of to-day reaching out to 4,000 feet, by aerial lines, and getting anything up to 200,000 feet a day.

Even the braking on these modern engines has now got beyond the powers of the hand-brake, the steam friction and dogs, and air brakes of the locomotive type are now found on the most modern engines.

The aforementioned period of strenuous mechanical competition has also brought in modern air-brake lowering engines, the compounding and duplicating of steam cylinders, and boiler pressures up to 200 pounds, with the result that some of the modern steam logging plants weigh upwards to one hundred tons and are mounted on all-steel railroad cars for transport, as against the old time ten-ton donkey on its primitive wooden sled.

Development of Heavy Geared Locomotive

Locomotive work has also developed out of all recognition as compared with old time methods. In British Columbia alone there are a score of operators owning railroads. Weights of locomotives have increased until, to-day, geared logging locomotives, in many cases, weigh up to ninety tons and are capable of handling loads on grades to eight percent with as much ease as in the case of the same loads handled on level road beds by straight connected locomotives.

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* Paper read before the British Columbia Professional Meeting of The Engineering Institute of Canada, Vancouver, B.C., June 16th, 1922.

Increasing Need of the Civil Engineer

Now to turn again to the civil engineering aspect of intensive logging as carried on to-day. Operations are constantly increasing in magnitude; ground and settings are now being surveyed with real technical accuracy, instead of by rule of thumb; and most large operators have found that, in order to obtain their product economically, it is imperative that they use the services of a thoroughly competent engineer whose duties are to exploit any particular location or setting, to its highest economical possibilities, along lines such as: — (a) Running in railroad in the most economical manner, with due regard to cheapness of road construction. (b) Choice of easiest and shortest grade, with regard to economy in subsequent haulage. (c) Location of central yarding point so as to save steam and spare mechanical equipment.

Some large operators are now inland as much as twenty miles. In these cases their last six or seven miles are probably actual heavy grade logging railroad in the timber, whereas there may possibly be some dozen or more miles of mainline from their base camp down to tide water where logs are boomed. These railroads, to-day, are by no means rough and ready, temporary roads. They are 50-pound construction, or better, and are fully and properly ballasted. All curves are run and banked as perfectly as on a mainline trans-continental road. It will therefore be readily seen that this thoroughness and accuracy demands the highest class of construction and supervision.

Power Equipment on Right-of-Way Construction

Instead of the hand methods of years ago, we now find the most powerful modern mechanical grading equipment used in the construction of this railroad, consisting of steam and other power shovels and ballast unloaders which form the modern and economical development of the old time methods. This constitutes another sphere in which the advance of mechanical science has served to ease the path of the construction man. Many of these shovels are handling 2,000 cubic yards of material per day, and the road is being constructed at approximately twelve times the speed that was the case in days gone by.

The Logging Engineer

With regard to the engineering future of the logging industry, logging is becoming, or rather, has become comparatively an exact science. Accordingly the United States universities instituted, and we are following closely on this idea, courses designed to evolve a more or less new kind of specialized engieer, who shall be sufficiently instructed mechanically to appreciate and operate, with proper care and economy, the highly modern mechanical equipment used in the woods to-day; he shall also be trained sufficiently as a civil engineer to lay out, operate and maintain main-line, branch and mountain railroad, and he shall, in addition to both these qualifications, be especially intensively trained in forestry. A man of the foregoing calibre sounds almost a super-human proposition, but there seems no doubt that the way the various universities are handling the situation men will be produced whose subsequent efforts will extract from the country the treasure of her raw material, whilst their technical ability will prevent the shameful destruction which is always the penalty of rule-of-thumb methods.

Modern Methods Developed to Avoid Destruction of Standing Timber

This last named aspect is one which in its past was badly mismanaged. In order to log out of any given limits the timber which was considered by the logger big enough to be worth while, a vast amount of immature and smaller timber was smashed beyond use in the process.

With modern mechanical means of to-day, especially with the overhead aerial systems, it is possible to pick timber from any location and yard it into a central point, without touching any of the surrounding timber. In this way, for instance, the smaller hemlock may be taken aerially out of any given limits, leaving the large stand of fir and cedar to be taken subsequently, when the falling of it would incur no damage to the smaller timber. It is emphasized that this saving has only been rendered possible by the judgment of the civil engineer, aided by the resources of the mechanical designer. In such ways as these is professional engineering rendering the country immense service and providing an ever increasing degree of all round economy.

WHY SHOULD I?

(The Broke Hustler, Iroquois Falls.)

The point of view makes all the difference in the world.

When there is something to be done that is slightly apart from a man's regular work, some men will say "Why should I do it?" And he doesn't do it. He can see a thousand reasons for not doing it.

The same attitude is frequently seen in regard to affairs in the community but is no particular person's job. There are lots of men who will say "Why should I do it?"

That is one point of view.

But there is another point of view.

Lots of men at their daily work come across things that are not exactly in their regular line, but should be done. Instead of saying "Why should I do it ?" and leaving it for somebody else to do, their attitude is, "Why shouldn't I do it?" And they do it.

It is the same in community matters, There are men who say "Why shouldn't I do it?" and do the things that are nobody's particular job, but are a benefit to the whole community. Unfortunately the "Why shouldn't I's" are far fewer than the, "Why should I's?"

It is a pretty safe bet that the man who says "Why should I?" doesn't get any too far up the ladder of his the least he can, and not the most he can. No man can daily work, because his attitude means that he is doing climb many rungs of a ladder on that basis. When a man is standing on one rung, his only chance to step up another is that he has proved to his boss that he is fit for the higher rung. And the only proof that is worth anything is DOING.

A man may be able to do all sorts of things, but he cannot blame anybody for not knowing it unless he does them. The man who not only does his definite work, but does all that comes to hand that is allied to it, very soon proves to his foreman or superintendent that he is able to handle a bigger job than he has. Nothing else counts as proof. There are more men held back by saying "Why should I?" than through any other cause. If every man were to adopt the slogan "Why shouldn't I?" the wheels would hum louder, and the whole crowd would be farther up the ladder.

George Carruthers, of the Interlake Tissue Mills, and Nelson Gain, of the Don Valley Paper Mills, Toronto, left Toronto on August 24 to attend a meeting of the Technical Section Executive of the Canadian Pulp and Paper Association in Montreal.

To Holders of Five Year $5\frac{1}{2}$ per cent Canada's Victory Bonds

Issued in 1917 and Maturing 1st December, 1922.

CONVERSION PROPOSALS

THE MINISTER OF FINANCE offers to holders of these bonds who desire to continue their investment in Dominion of Canada securities the privilege of exchanging the maturing bonds for new bonds bearing $5\frac{1}{2}$ per cent interest, payable half yearly, of either of the following classes:—

(a) Five year bonds, dated 1st November, 1922, to mature 1st November, 1927.

(b) Ten year bonds, dated 1st November, 1922, to mature 1st November, 1932.

While the maturing bonds will carry interest to 1st December, 1922, the new bonds will commence to earn interest from 1st November, 1922, GIVING A BONUS OF A FULL MONTH'S INTEREST TO THOSE AVAILING THEMSELVES OF THE CONVERSION PRIVILEGE.

This offer is made to holders of the maturing bonds and is not open to other investors. The bonds to be issued under this proposal will be substantially of the same character as those which are maturing, except that the exemption from taxation does not apply to the new issue.

Holders of the maturing bonds who wish to avail themselves of this conversion privilege should take their bonds AS EARLY AS POSSIBLE, BUT NOT LATER THAN SEPTEMBER 30th, to a Branch of any Chartered Bank in Canada and receive in exchange an official receipt for the bonds surrendered, containing an undertaking to deliver the corresponding bonds of the new issue.

Holders of maturing fully registered bonds, interest payable by cheque from Ottawa, will receive their December 1 interest cheque as usual. Holders of coupon bonds will detach and retain the last unmatured coupon before surrendering the bond itself for conversion purposes.

The surrendered bonds will be forwarded by banks to the Minister of Finance at Ottawa, where they will be exchanged for bonds of the new issue, in fully registered, or coupon registered or coupon bearer form carrying interest payable 1st May and 1st November of each year of the duration of the loan, the first interest payment accruing and payable 1st May, 1923. Bonds of the new issue will be sent to the banks for delivery immediately after the receipt of the surrendered bonds.

The bonds of the maturing issue which are not converted under this proposal will be paid off in cash on the 1st December, 1922.

W. S. FIELDING,
Minister of Finance.

Dated at Ottawa, 8th August, 1922.

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Long recognized as the standard of quality, you can count on years of service from "rubber" roofing bearing the Everlastic label. Made from high grade weather-resisting, waterproof materials, it is backed by a seventy-five years' reputation for good roofings. In industrial districts where the action of smoke, steam and fumes combines with weather conditions, the superior durability of Everlastic Roofing is strikingly demonstrated. Yet its cost is moderate. Made in three weights — light (1-ply), medium (2-ply), heavy (3-ply). Nails and cement with each roll — 108 square feet to the roll.

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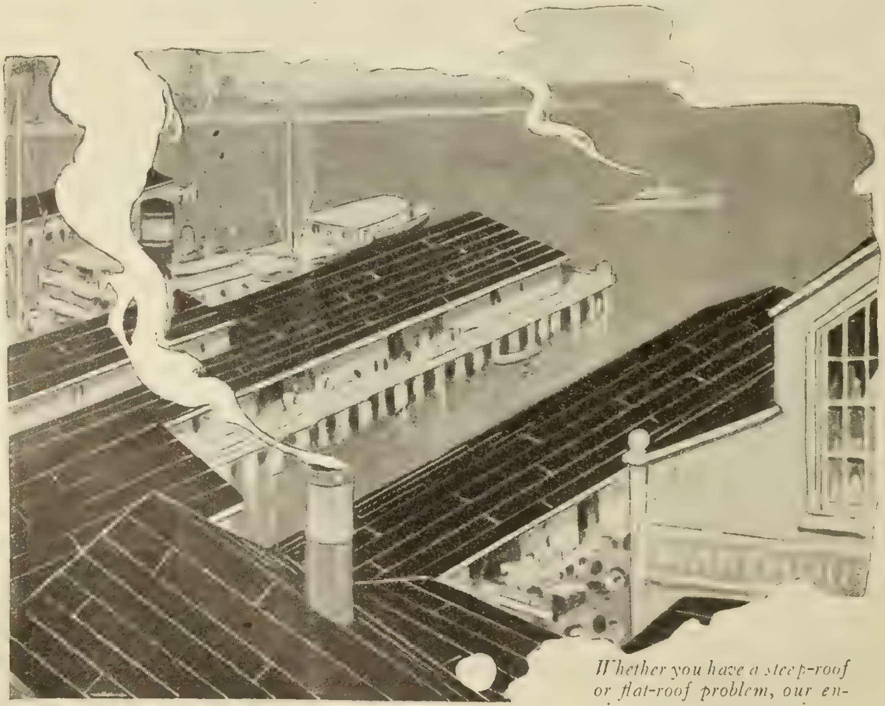

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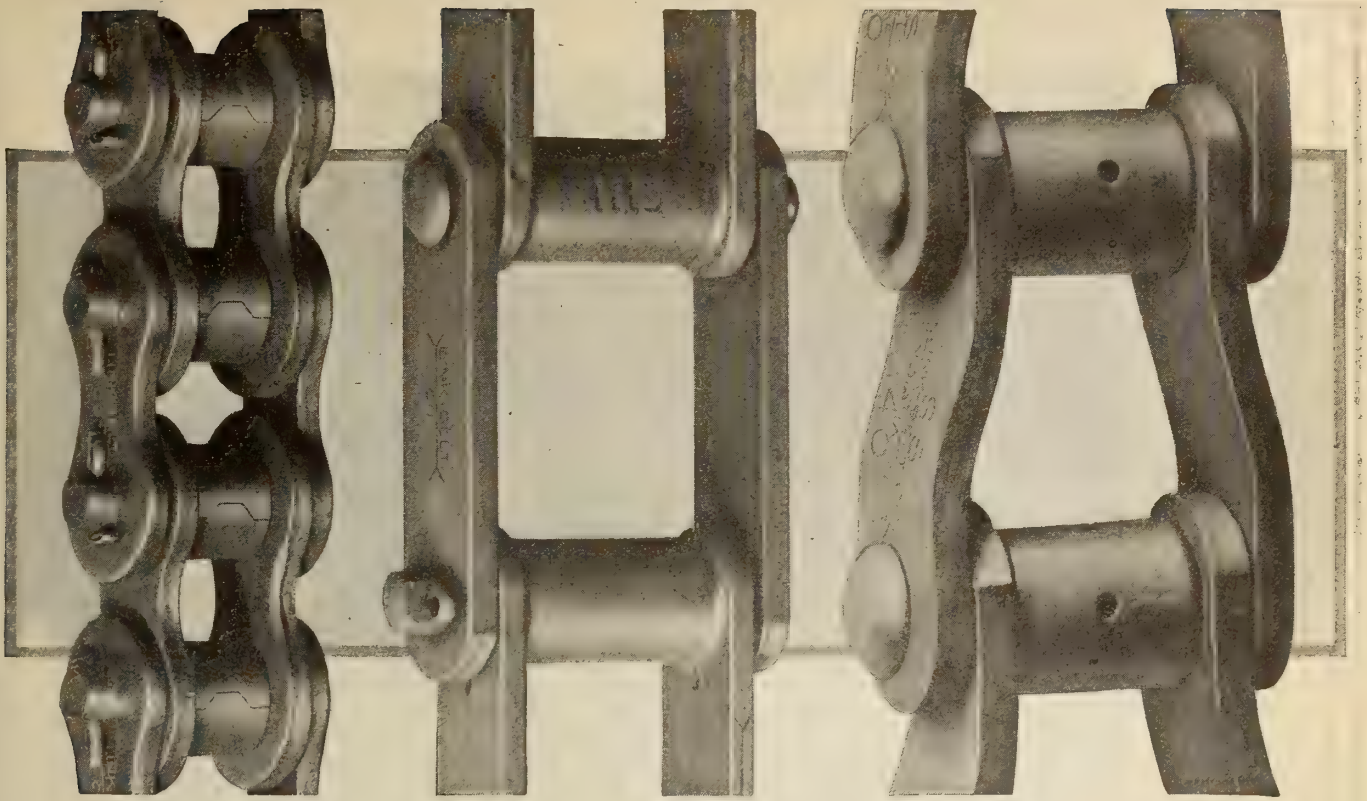

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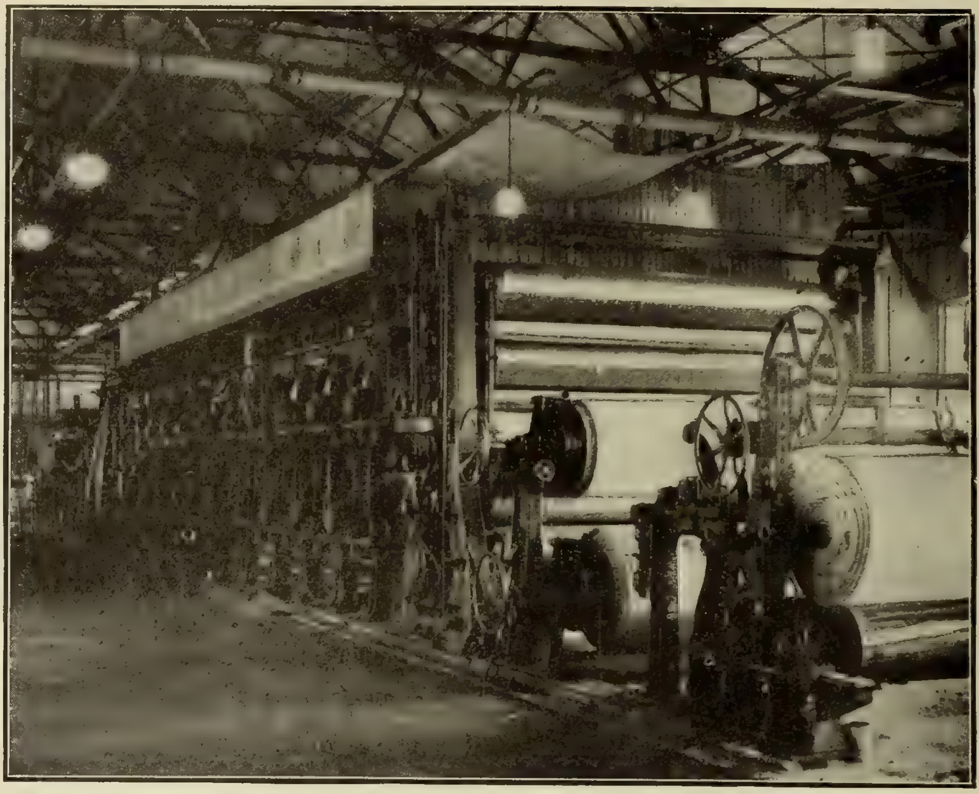

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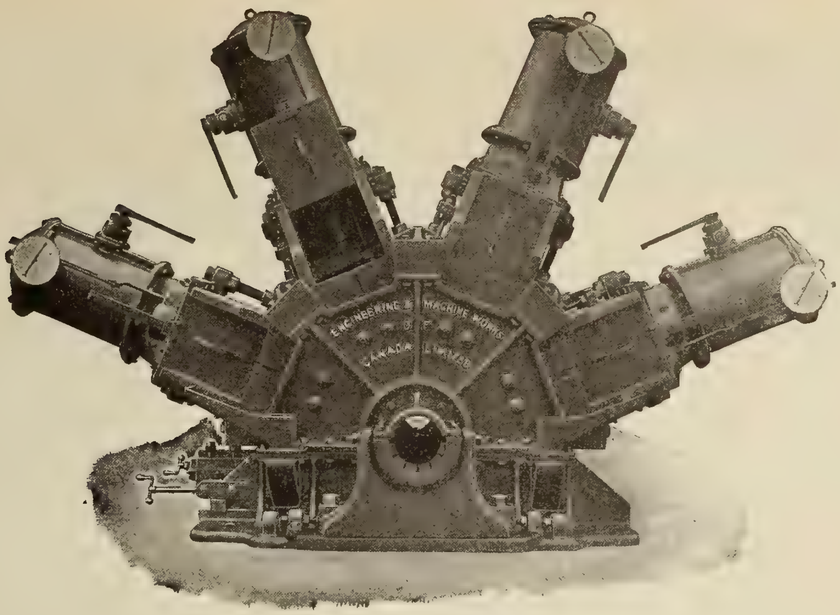

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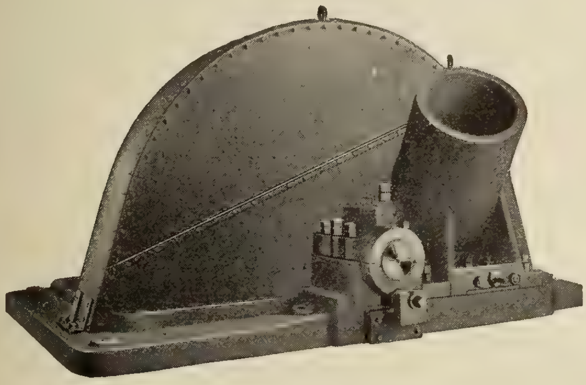

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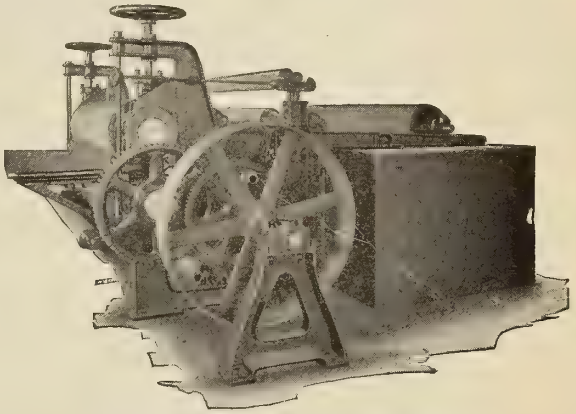

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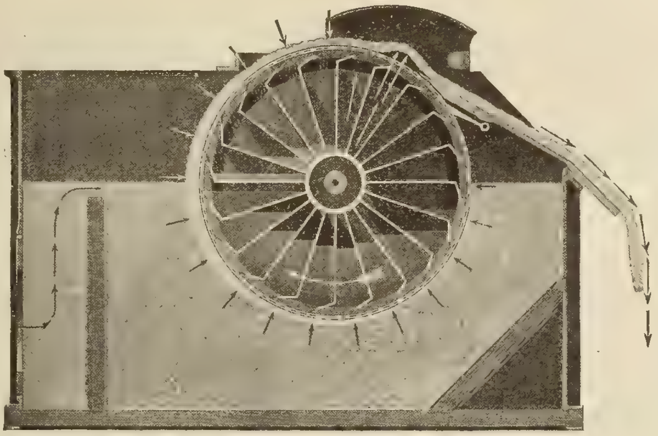

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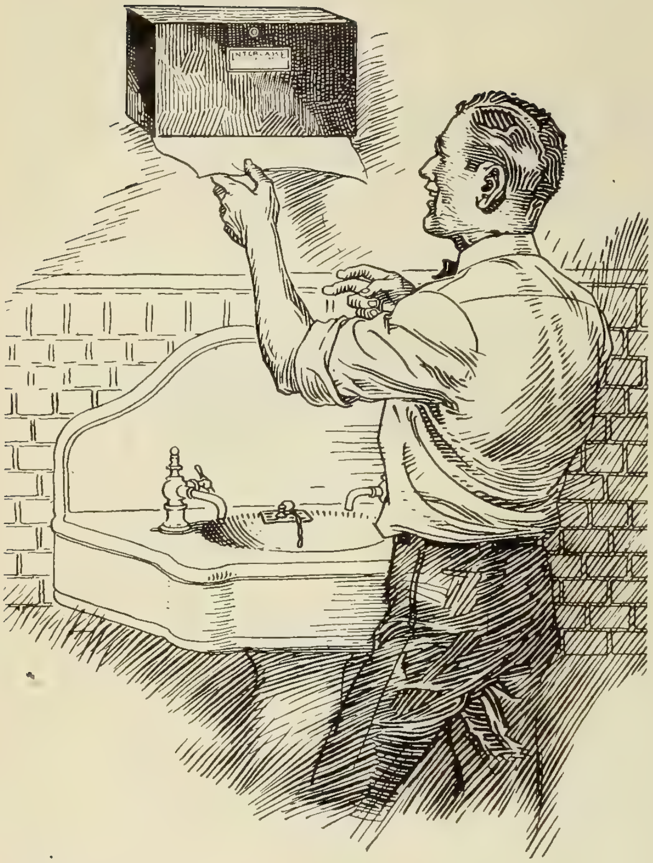

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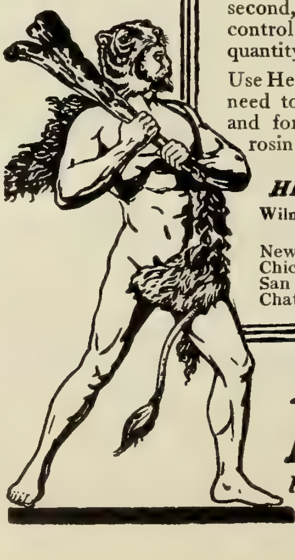

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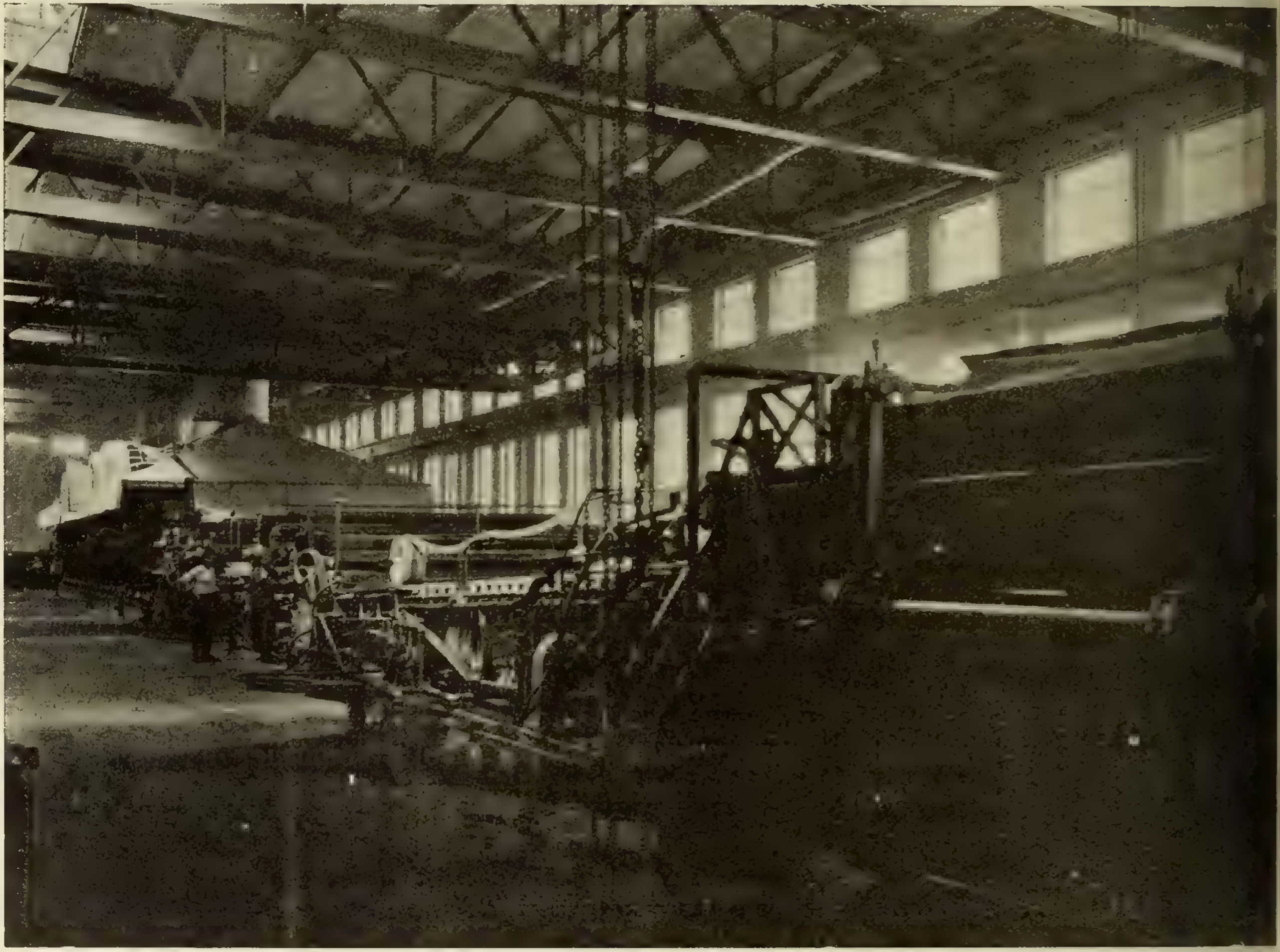

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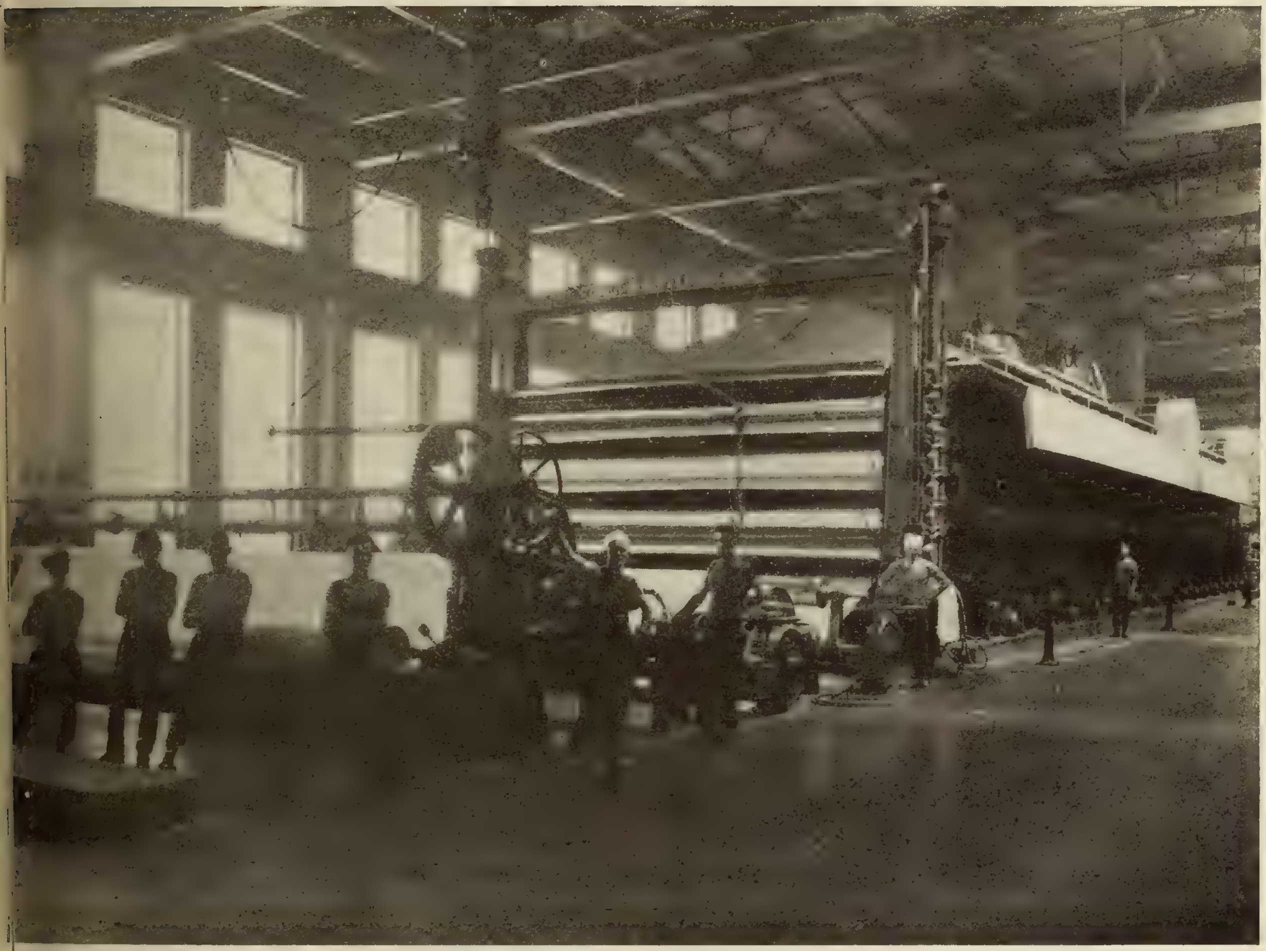

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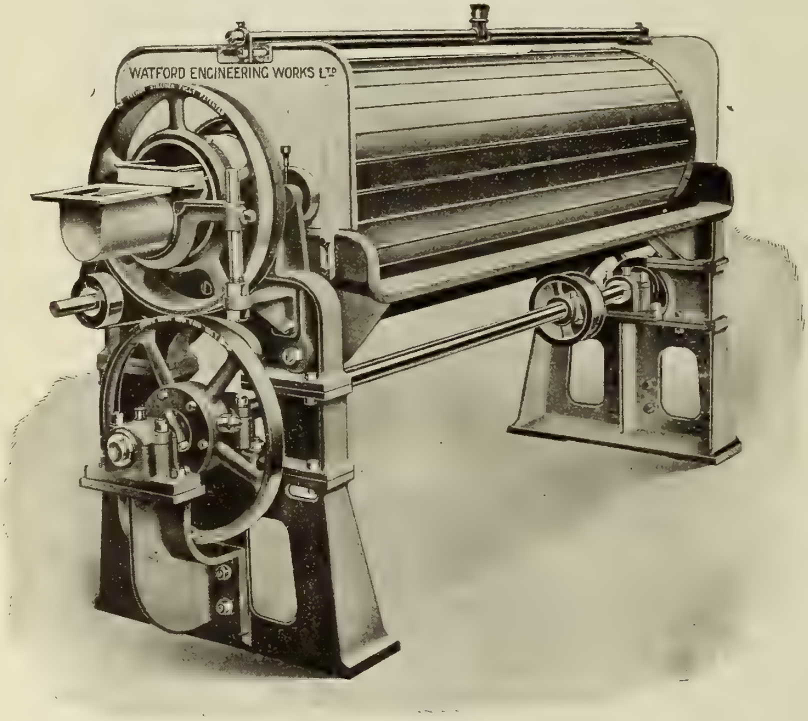

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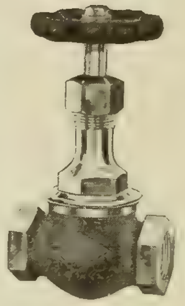

Fig. 106

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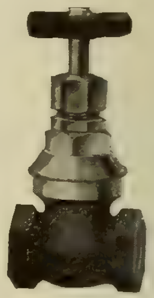

Fig. 300

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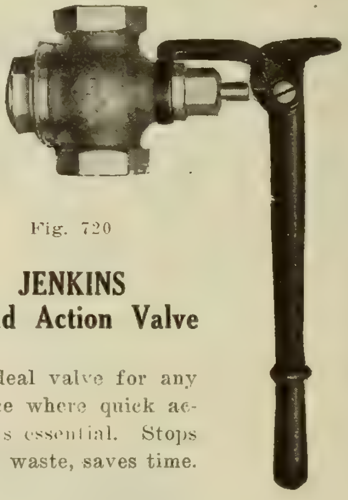

Fig. 720

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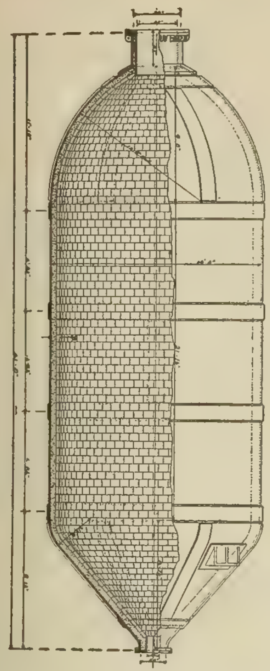

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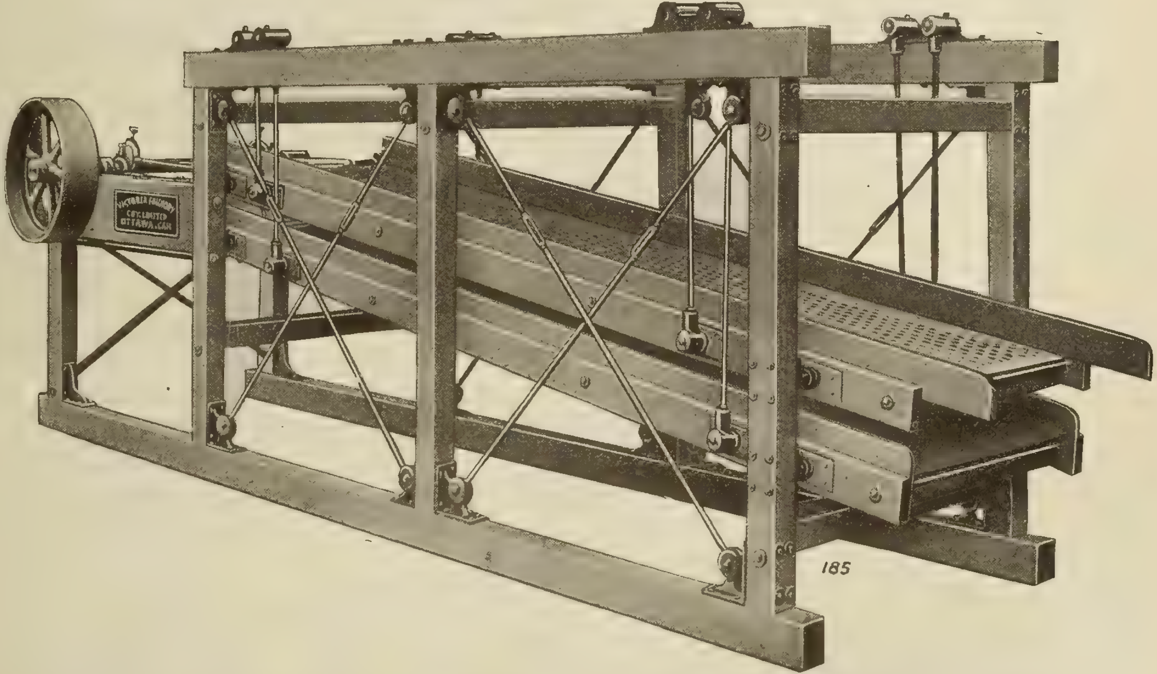
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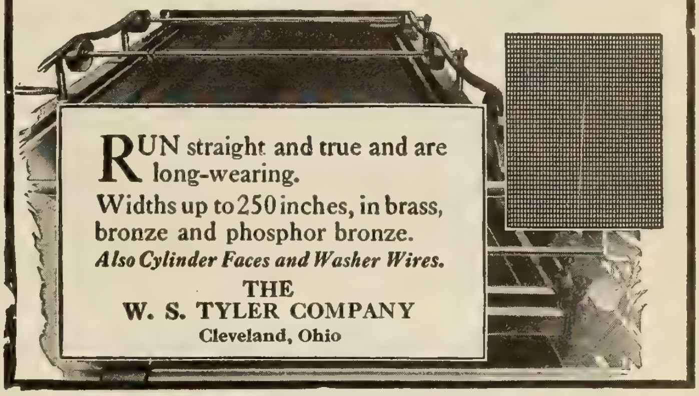

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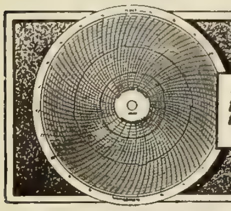

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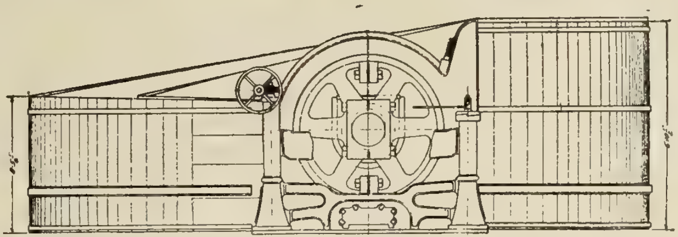

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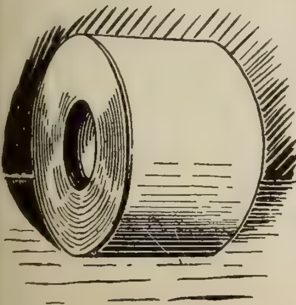

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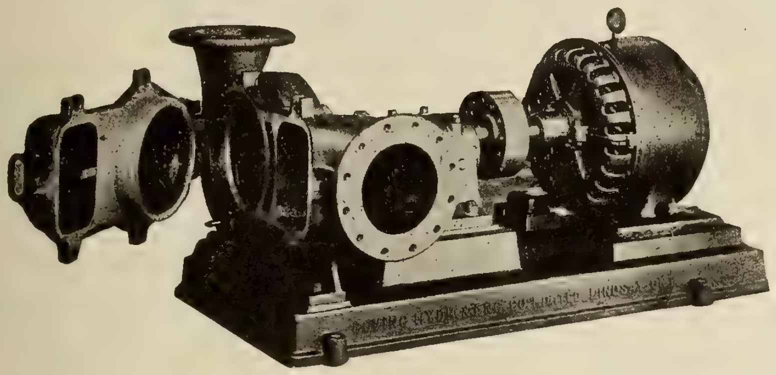

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VOL. XX. GARDENVALE, P. Q., September 8th, 1922 No. 36

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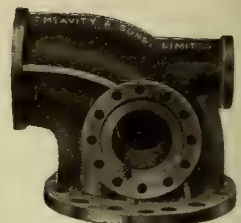

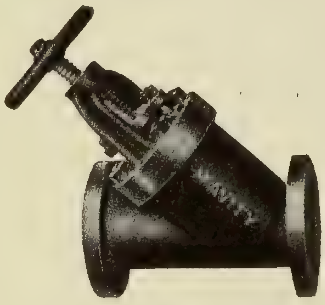

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:-: EDITORIAL :-:

OUR FAMILY REUNION

There are two branches to the family of the Industrial and Educational Publishing Co., the Press at Toronto, Ont., and the Press at St. Anne de Bellevue, P. Q. We had our annual reunion and dinner at St. Anne's last Monday. Tennis and baseball contests aroused a lot of rivalry and fun, the Labor Day parade and a league ball game furnished entertainment, while the dinner, at which 65 sat, made a grand finale for a perfect day. There were many compliments for the fine appearance of the plant at Gardenvale.

STEAM FROM ELECTRICITY

The production of steam by electricity seems, at first sight, a rather striking example of whimsical and ingenious paradox. But the electric steam generator has already achieved a certain, and is destined, one cannot doubt, to achieve a much wider, sphere of usefulness in its application of electric energy and its conversion to heat energy. For analysis of present conditions of energy production and conversion, accentuated by the recent, and, indeed, still continuing, dislocation of all kinds of productive activities, has shown that the electric steam generator has a very valuable place where hydro electric power is available which otherwise would be suffered to be idle or to go to waste.

It is not claimed that electricity can be produced to compete with coal for the making of steam at normal times and under conditions where electric power is sold on a kilowatt hour basis. But in a number of European countries possessing hydro electric power, the scarcity and high price of fuel, in recent years, have combined to favor the development and use of various methods, such as the electric steam generator, of generating steam by electricity. According to a very interesting paper on this subject by Mr. F. T. Kaelin, M.E.I.C., chief engineer to the Shawinigan Water and Power Company, read early this year before a joint meeting of the Montreal section of the Society of Chemical Industry, the Engineering Institute of Canada and the Canadian Institute of Mining and Metallurgy, there are more than three hundred installations known to exist in Italy, Switzerland, Sweden and France. In Canada and the United States a small number of generators have been in use for a short time.

Among the paper companies, and other industrial concerns, in the St. Maurice Valley district there have been quite a few installations of these appliances for the electrical generation of steam. The Laurentide Company has one of the largest installations thus far, and the Shawinigan Water and Power Company and the Laurentide Power Company must be benefiting largely by reason of their being able to dispose of their off peak load in this manner. For not only is the new apparatus very valuable to paper and other industrial companies by rendering them independent of coal in emergencies—in fact, with some industrial companies in the St. Maurice Valley, coal is now said to be playing quite a secondary part in the turning of wheels—but it is also giving power companies a market for their surplus current at a figure sufficient at least to pay operating and carrying charges.

Power companies have had cause, in these recent times of industrial depression, to consider the problem of the disposal of their surplus power. This power they can obviously afford to sell cheaper while there is no other market for it, in preference to allowing it to run to waste, but it must yet be emphasized that they could not afford to develop hydro electric power for the main purpose of generating steam in competition with coal. Thus the problem that has been confronting them has been to find a use for their surplus power, which would not require any expensive installation, new machinery or additional apparatus. And a solution, or part solution, of this problem has unquestionably been found in the turning of electric power into heat in the form of steam which is used very largely in many industries, and especially in the pulp and paper industry.

Some of the installations in operation today may be considered as temporary, and as, in fact, owing their existence to exceptional industrial and other conditions. At the same time, there can be little doubt that there are many cases where the electric steam generator has made for itself a valuable place and one of permanent usefulness at such times as there is power available from the power companies. In the paper from which we have quoted, Mr. Kaelin suggests that it may even be feasible to use only night power by means of close cooperation of the power company with the power user, and in virtue of the fact that the starting and stopping of electric steam generators take only a few minutes. These are points which, as he says, render the steam generator a very flexible apparatus and make it very useful for the conversion of electric energy, at any time, at short notice and at extremely low cost, into valuable heat energy.

In the electric steam generators all electric energy is converted into heat energy, and the electric current passes through a resistance, either of metal or formed by the water to be evaporated. They have been built during the last ten years in capacities up to 1,000 kilowatt, and only within the last two years sizes of 2,000 kilowatt and more have made their appearance. Steam generators can be divided, as appears from what we have just said as to the passage of the electric current, into two main and distinct classes: First, generators in which the electric current passes through a combination of metallic resistors; and secondly, generators in which the water itself forms the electric resistance. In his paper above referred to, Mr. Kaelin emphasizes the outstanding advantages of the water resistance type, as compared with other types, as consisting in simplicity of construction, compactness, easy control, and its very low cost per kilowatt capacity which is very often the determining factor, especially for temporary installations, or where flat rate power is consumed to fatten the load factor of an industrial plant.

Among the other advantages of the electric steam generator over the usual coal fired boiler, Mr. Kaelin instances the fact that any interruption to feed water supply simply means the shutting down of the generator and does not introduce any danger. The steam generator is equipped with the usual steam safety valves, and can, in addition, be supplied with an automatic blow-off valve which discharges the water and thereby shuts down the generator, should the pressure go beyond a fixed limit. Other safety devices consist in relay protection of the electric circuit in case of short circuit, unbalancing or ground on the electric system, and a trip for the automatic oil switch, which will interrupt power and therefore the steam supply. Accordingly, the operation of the steam generator may be said to be as safe as, if not safer than, that of the ordinary boiler, and the insurance companies have no hesitation in accepting insurance on the apparatus in the usual manner.

What we have said will suffice to show something of the importance to industry of the electric steam generator and its possibilities. In the near future we shall publish a special article going into the whole subject in considerable detail.

A PROBLEM IN POINT

What causes fog? Scientists say it is due to the condensation of atmospheric moisture, induced by dust particles and concentrated about them as nuclei. Does a pulp mill emit dust particles that persist in the air at sufficient distances to produce fog? Does the presence of a characteristic pulp mill odor prove or indicate the presence of pulp mill dust? If so, what is the nature and source of this dust and how can it be sufficiently eliminated from gases discharged from the mill to keep the surrounding air free of fog? Do the gases themselves have anything to do with the problem? Or do they simply accompany ordinary boiler plant flue dust?

This is only one of a thousand problems that a Federal Research Institute should now be working on. Let's have the Institute, or at least a co-ordination of the facilities of the industry.

INVEST WISELY AND WELL

Dominion Government bonds, to the amount of some $178,000,000 will mature on the 1st of December next. With such a large loan as that repayable in Canada, holders of the bonds in question will naturally ask themselves what they are going to do with the money. The offer of the Minister of Finance to exchange the maturing bonds for new bonds bearing 5½ per cent. interest, payable half yearly, supplies the answer—and in our view as good an answer as can be desired—to a query of this kind.

The procedure is simplicity itself. Bondholders who desire to avail themselves of this conversion privilege should take their bonds as early as possible—but not later than the 30th of this present month of September—to a branch of any chartered bank in Canada; and receive in exchange an official receipt for the bonds surrendered, containing an undertaking to deliver the corresponding bonds of the new issue.

To the question, What shall I do with the money? the answer is, Get the highest possible security and a liberal rate of interest by availing yourself of the Government's simple conversion scheme.

A LITTLE TALK ON THRIFT

By S. W. STRAUS, President American Society for Thrift.

Within a short time our schools will reopen, and it is appropriate that we give thought at this time to the important problem of thrift instructions to the young.

In a recent statement, Secretary Hughes said: "The primary lesson for the citizen of democracy is self-control, and this is achieved only through self-discipline. As I look back upon my own life I find the best lessons were the hardest."

It is important that our boys and girls be given thrift instruction because of the things briefly referred to in this quotation from our Secretary of State.

Thrift devolops self-control and self-discipline, and we do no kindness to any child when we pamper it, when we make the way too easy, or when we foster the idea that life has no hardships.

It is unfortunate that discussion of the question of teaching thrift in the schools leads many to believe that we have in mind the thought of teaching the child to hoard its pennies. We heard a man recently make the following statement:

"I am against teaching thrift in the schools. I remember they tried it on me when I was a youngster and if I had followed the teachings they gave me I would have turned out to be a miser."

It is indeed most important that the kind of thrift which means progress and efficency be the only kind taught for great harm has been done by spreading the understanding that thrift means merely saving money.

A great many successful men in America today have learned the value of thrift in the school of hard knocks, and it is essential that succeeding generations of our citizens be given the value of these lessons, and educational groundwork.

More and more the subject of thrift is being taken up in our schools, and no educational movement is of greater importance. A few moments a day spent in the correct instruction of school children on these practical matters, will prove of incalculable benefit to our nation and to all humanity.

NEW EDITION OF LOCKWOOD'S DIRECTORY OF THE PAPER AND ALLIED TRADES

The 48th Annual Edition of LOCKWOOD'S DIRECTORY of the Paper and Allied Trades will be ready for delivery shortly after the 1st of September.

The Pulp and Paper Magazine will give your order prompt attention.

The Coloring of Paper on the Paper Machine

A Review of the Recent Patent Literature on the Subject, Indicative of European Practice

Prepared by ~~Clarence C. West~~ J. Ginsberg for the Paper Trade Journal. Reprinted by arrangement.

This article is an abstract of a much larger treatise on this important subject by the well-known German paper chemist, Dr. Emil Heuser, editor of Der Papier-Fabrikant. In the abstract there are given descriptions of the latest developments in the process of coloring paper on the paper-making machine, as depicted in the patent literature. These processes reflect European practice entirely, and particularly German practice. The article is accordingly of real practical value, as the coloring of paper on the papermaking machine is a German development.—Translator's note.

I. Coloring the Paper Web on the Paper Machine by the Addition of Solutions of the Coloring Matter

In Ger. Pat. No. 278,923, the Farbewerke vorm. Meister Lucius & Bruening, have patented a process of producing sporadically shaded paper or paper showing variegated spots which are highly colored in comparison with the rest of the product. This is accomplished by allowing dilute solutions of the coloring matters to flow over the top of the paper pulp, which lies in flake form on the wire of the paper machine. The waste pulp solution or back water that drains from the wire, containing considerable proportions of strongly or partly colored particles, is used over again. The coloring matter precipitates in the depressions and colors the corresponding part of the paper a deeper shade than the raised portions. In this manner a shading effect is obtained on the paper. When the back water is admixed with other color solutions or when other colored fibers are added, or particles of lake colors or mineral colors, then the shading effect can be heightened. The paper web can be provided artificially with high and low spots so as to accentuate the color designs on the same.

Coloring Paper on Both Sides

The same company has (see Ger. Pat. No. 268,243) a process of producing color shades on both sides of the paper. This is accomplished by subjecting the under side of the paper to the action of a roll, etched with a design or any other suitable arrangement, whereby the paper is impregnated with such liquids as alcohol, acetic acid, formic acid or other fat solvents which are soluble in water. This treatment is preliminary to passing the paper through the dye bath. When the paper is dyed, the color is absorbed very quickly and fixed in such a manner that exactly the same design in the same color tones appear on both the top and the underside of the paper. This ingenious process will produce a paper which has an accurate image of the colored design appearing on the top of the paper, on the under-side of the same, without the dye having to penetrate through the body of the paper itself. For this reason the process may be applied to the finished paper as well as to the paper in the course of formation on the paper-making machine. The process is improved in a subsequent patent (see Ger. Pat. No. 283,371, March 8, 1914). The improvement consists in the addition of hydroscopic substances, such as magnesium chloride, to the aqueous solution of the fat solvents. This has the effect of bringing out the designs in sharper outlines and in stronger colors.

Combined Coloring and Sizing Process

The process, which is described in Ger. Pat. No. 296,089, deals with the simultaneous coloring and sizing of paper in the presence of protective colloids. The peculiar advantage of this process is that the presence of these colloids enables the use of dyestuffs, which would otherwise be precipitated out of solution. This refers particularly to colors which would have this mutual effect on each other and permits the use of both acid and basic dyestuffs in a common solution. In a later patent (see Ger. Pat. No. 297,535, July 19, 1914), the process is improved so that the paper is colored only, and not simultaneously sized. The protective action of the colloid protectors takes place in an exactly similar manner. The process is of considerable practical significance for certain particular types of paper, such as parchment paper. The newly discovered possibility of combining various coloring matters of entirely different properties makes it possible to produce new and surprising effects.

Mottled or Marbled Paper of Variegated Colors

Paper and cardboard can be given a marbled effect in variegated colors by means of the process described in Ger. Pat. N. 322,773. The practical method of carrying out this process is as follows:

This paper, which has the power of absorbing liquids and which in any case is sized on one side or combined with a layer of sized paper, is subjected to treatment on the well-known color printing machine or through any other of the known methods of dyeing or color printing, where a mixture of three aniline colors is used, which as a general rule always differ somewhat in specific gravity or in solubility—such colors as blue, red and green. The colors are completely dried or almost so by means of air, so as to secure as uniform a product as possible. Then the colored surface is subjected to sporadic spraying with water. This may be carried out with the aid of different devices. One of the favorite ways of doing this is to spray the water through a stencil design. Effects corresponding to the design are produced. The form and size of the water spots are also a determinant factor in the design. The process can be carried out with hand labor.

The marbling of the paper can be effected later by careful finely distributed spraying of the well-known marbling agents, such as shellac or by the immersion of the paper in a bath containing this material dissolved in volatile solvents.

II. Coloring the Paper by Means of Rolls

In Ger. Pat. No. 283,752 there is described a process of producing color effects on paper by means of color rolls. This paper, which is designed specially for documents, postage stamps, revenue stamps, etc., is made in the regular manner on the paper machine. The web of paper, which leaves the couch roll in the wet condition, before it is allowed to pass over the drying cylinders, is colored with the dyestuff by means of a ruling device in straight full lines, broken lines, dotted lines, undulatory lines or else in some definite design. The color penetrates into the wet paper and is adsorbed therein before the paper reaches the drying cylinders. The result, obtained in this manner, is a paper with blotted, faint lines in the place of the sharp defined lines that are usually obtained. These lines can be produced just on one side of the paper only, or else by allowing the color to penetrate completely through, the underside of the paper is colored as well. The color is applied to the paper by means of rolls, which are etched in lines or designs. The lines can be reproduced on the paper either in the length or across the paper web. A small color wheel can also be moved back and forth across the width of the paper, as it moves through the paper-making machine, in the manner that a weaver's shuttle works. All sorts of special effects can be produced in this manner.

In Fig. 1 there is seen a four-drum paper machine, which is furnishd with this coloring device. The paper web *b*, which is still in the moist condition, is led over the suction box *c* by means of the screen *a*. The web of paper is then passed between the couch rolls *d d* and finally reaches the felt *e*, by means of which the paper is led to the presses *f* and the other parts, of the paper machine, which however, are not shown in this figure.

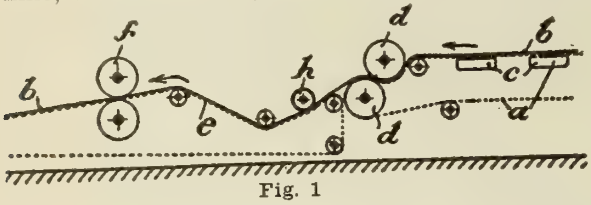


Fig. 1

Right behind the couch rollers *d d*, the ruling arrangement *h* is located. This is either a roll or a small colour wheel which applies the dyestuff on the wet paper. The colors, which are absorbed into the paper, are reproduced in different kinds of lines or designs. The absorption of the color into the paper can be regulated so that any degree of blurring of the design can be secured.

The color roll can be located at different parts of the machine. One condition, however, must always be fulfilled—namely, that the color is applied to the wet paper, so that it can penetrate it and be absorbed by the fibers to produce a blurred effect.

Lucius and Bruening Process of Applying Color by Means of a Color Roll

This process is patented in Ger. Pat. No. 347,940. Solutions of the dyestuff or dyestuffs are allowed to flow over a rotating cylinder. Emulsions or suspensions of the coloring matters may be used as well. An uneven distribution of the color is required for the production of various color designs on the paper or on the pasteboard products. The cylinder is then brought in contact with the paper web. The solutions of the dyestuffs may contain additions of alcohol, glycerine, acetic acid, gum tragacanth, casein and other similar substances, or emulsions, lacquers, suspensions, for example, of bronze, mica, etc. Natural unevenness in the paper or that produced artificially serve to diversify the character of the designs produced thereon under certain conditions.

The application of the color to the cylinders can be carried out in an irregular fashion, as for example by a more or less oscillating or circular motion of the color-applying device, or else the irregularity of the coloring can be produced on the cylinder itself, for example with the aid of etched rollers, trailing parts that trace out lines and figures, the influence of liquids and air pressure.

This process can be operated on the paper in both the wet and dry condition in the corresponding part of the paper-making machine. For instance, one of the drying cylinders in the paper-making machine can be used for this purpose, when the color is applied to that surface of the cylinder which is not covered with the paper. Similarly, a specially constructed cylinder can be located at any other part of the machine.

The process can also be applied to finished paper, if the paper is first moistened sufficiently or treated in any way to render it properly absorbent. The necessity of this operation may be avoided when substances that are able of rendering the paper absorbent are incorporated with the color bath itself. These exert their action at the same time that the paper is being colored. This method is conducting the process is very effective.

III. Coloring and Producing Designs on Paper by Means of Differently Colored Paper Pulp

Such a process has been patented in Germany (see Ger. Pat. No. 266,236). The coloring and design effects are produced by means of at least two differently colored or embossed paper webs, which are produced independently of each other and which are super-imposed on each other. One of these paper webs possesses the same design that is embossed on the other paper web, but cut out like a stencil, so that the design on the under surface paper will be visible through it and the whole will have the appearance of a single sheet of paper.

One of the many different ways in which this process can be carried out is shown in diagrammatic form in Fig. 2. The pulp, which flows out of the tank 1 on to the screen 2, is carried around on this frame-like screen, which is beveled in the center and which passes around at least four corner rolls, 3, 4, 5 and 6. Between the two rolls 4 and 5 the paper pulp is subjected to action of drops of a liquid which fall upon it at a sharp angle from the dropping device 7. The drops are ejected under pressure and when they strike the surface of the paper, the angle of the impact is very sharp. The effect of these drops is to produce a grouping of the fibers in the form of an oval with a compressed under-edge. On the other hand, if the dropping arrangment is located at the point 7a, so that the drops of water are ejected and fall on the paper web on the horizontal section of the screen between the rolls 3 and 4, where the layer of paper pulp is very thin, then the impression of the drop on the paper is circular in form and after the couching of the paper, this impression takes the form of a circle, which increases in thickness from the circumference towards the center.

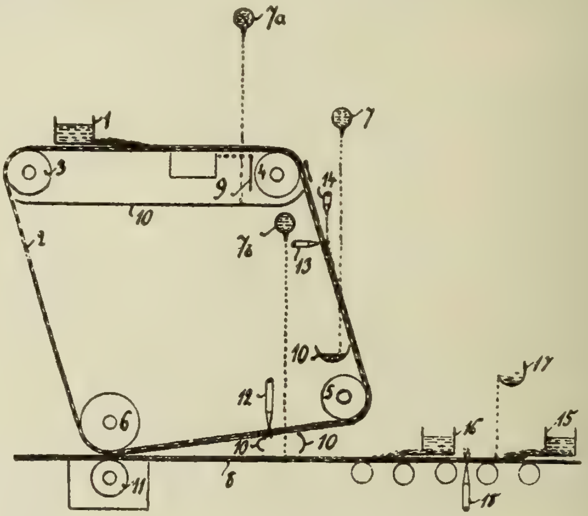


Fig. 2

Again, if the drops are allowed to fall on the paper as it pases betwen the rolls 5 and 6 from a dropping arrangement 7b, then the drops of water pass through the screen and in their passage through it they absorb a certain amount of paper pulp. These drops of pulp-entrained water may be permitted to fall on another paper web 8, which is specially prepared for this purpose and which runs horizontally under the regular web. The drops of pulp are then subjected to a couching action between the rolls 6 and 11 and are agglomerated with the paper web.

In the place of the drops of water, atomized water or air pressure can be used in this process. The atomized water and air pressure is applied through the nozzles 12 and 13. In this manner the desired splitting up of the fiber layer is accomplished or the centrifuging of the particles of the paper fiber. The action of the nozzles may be periodic in nature and likewise the nozzles may be given a lateral motion while they are operating. A resilient surface 9 is provided and located at the under surface of the screen which is free from paper pulp. This is used to attain special effects and is employed only when the dropping arrangement at 7a is employed. Catch pans 10 are placed at suitable points in the apparatus to catch the liquor which flows off from the screen and the paper web.

At 17 there is located a water-feeding device which overruns at periodic intervals and allows a little water to trickle down and wet the paper web. This is arranged to secure special effects on the paper. The nature of these effects is dependent on whether the drops of water strike a horizontal web screen or one inclined at an angle to the horizontal. Other special effects are obtained when strongly diluted and differently colored paper pulp is allowed to drop down on the paper web which is then subjected to the action of an air blast. Water and variously colored paper pulp can also be sprayed on the layer of paper fiber, which is carried past the nozzle on the wire, inclined a definite angle to the horizontal. Peculiarly displaced designs are produced on the paper in this manner.

Coloring of the Paper on One Side Only

When water is sprayed against the paper web on the under side of the screen, while the paper web is being subjected to the action of suction to remove the water, then breaks of a serrated outline are obtained in the fibrous structure. If the fibers resulting from the disturbance of the paper web by means of a pressure arrangement, which is located at the under side or inner side of the sreen—for example, by means of air pressure or a liquid under pressure applied through the nozzle 13—which fibers are partly raised off the surface of the screen, if these fibers and groups of fibers are sprayed with color solutions through the atomizing nozzle 14, so that the color strikes the fibers at a sharp angle, then the paper web is colored on one side only. After the paper has been couched, the design made by these fibers appears to lie on the surface of the paper. The water which has penetrated through the paper web and paper pulp entrained therewith can be recovered by means of a current of air and thrown back again on the screen. When this is done, the design produced on the paper is more indistinct. Then when two such paper films of different colors, which have been subjected to this action, are placed one on top of the other to form a paper web, the marbling effect on the paper is three-colored.

Producing Cloudy Effects on the Paper

Peculiar marbling effects are secured by periodic spraying of diluted, variously colored paper stocks through pressure tubing, arranged at different angles with respect to the paper web. The spraying is carried out on different sides of the paper from movable nozzles and with the use of a reflecting surface, which is firmly fixed right back of the wire. Likewise, peculiar disarrangements of the layer of fibers is obtained by means of different movable air-pressure and water-pressure nozzles, which are arranged in various positions with respect to the paper web.

Production of a Tiger Skin Effect on the Paper

This effect is obtained by the use of water pressure nozzles, which are suspended in pendulum fashion over the oblique part of the screen so that they make a sharp angle with the paper web. The action of these water pressure nozzles is periodic. The same effect may be secured with the aid of a roll, which is provided with longitudinal felted stripes and which presses against the paper web, as the latter is passed between it and a couch roll. Other means for breaking through the fibers or shifting them to one side, so as to produce various marbled effects in the paper, are rigid textile fabrics, cord nets and rolls, which are envoloped in felt; furthermore, pieces of whalebone, arranged on a roll or in strips and similar cutting or rotating devices are also used to produce the same effects.

Stenciled Design on Paper

Various designs of regular form are reproduced on the paper web by means of stencils which, for example, may be made out of rubberized cloth. These are located directly under the length of the screen, covering its upper surface. Through these stencils, the pressure fluid is allowed to act on the paper web, so as to produce a regular design on the paper.

The stencils can be arranged in an endless chain, moving over the surface of the screen. They may move faster or slower than the screen itself or they can be moved from side to side. When the stencils are used, it is also possible to use a suction roll or drum in the place of the pressure devices to produce a definitely designed disturbance of the layer of fibers. When a pressure roll is employed, it can take the place of a guide roll (either 4 or 5) at the same time.

A layer of fibers, which has been couched from the wire on the felt, can be worked up in such a manner that the felt plus the layer of fibers run over a suction roll, which is provided with slits, through which the fiber is sucked through the felt in strips. Now, if atomized water under high pressure is allowed to act on the layer of fibers at a sharp angle, then the fibers, which have not been sucked through, are moved together. A design which is produced on the paper in this manner shows thickened edges on one side.

Various Colored Marbling Effects

Variegated colored marbling effects can be produced by the use of a number of different screens, on which several layers of fibers are formed and then superimposed one on the other to form the paper web. Circular screens are also suited for this purpose. The screens must not be allowed to dip into the paper stuff too far in carrying out this process.

Double Marbling with Fourdrinier Wire

The figure, see Fig. 2, also shows how the fourdrinier wire is used in the process to produce double marbling effects on the paper. The paper stuff, which is designed for the layer of fibers which will be disarranged, flows a trough 15 on to the wire 8. The disarrangement of the out of fibers in this paper layer is accomplished with the aid of the various devices which have already been described above. By these means, which are arranged in various ingenious ways, almost every effect which is obtained with the framed screen can be reproduced with the fourdrinier wire. In the case which is represented in the figure, the liquid spray, which is emitted from the trough 17, and the air pressure or water pressure, which streams through the screen from a nozzle tube, arranged on the under side of the screen, are used as means to this end. On this layer of fibers, which has been disarranged by one or the other of these methods and in certain cases also by the aid of stencils, suction or pressure rolls, paper stuff is allowed to flow for the production of the regular paper web. In order to secure papers which are colored on both sides, a second disarranged paper layer which, for example, may have been produced on the framed screen arrangement, is brought upon the upper face of the paper web by couching or by spraying, in the manner which has has been described above.

Marbling of Paper by Means of Round Cylinder Screen

A method of obtaining papers which have the marbling effect on one side only is described in Ger. Pat. No. 325,920. The apparatus used for this purpose is shown in Fig. 3 The paper stuff, which is very much diluted with water, is fed to the stuff-box K and is kept at a definite level therein. Between the round cylinder screen R and the wire L, which is led around it, there is placed a piece of oilcloth W. The latter has the design, which it is desired to transpose to the paper, cut out on it, so that the water runs away through the cuts, while the paper fibers are sucked through and are taken up by the wire in the form of the design, cut out in the oilcloth. The paper stuff, fed from another source, then runs past the froth separators *a* to form the regular paper layer, which is joined to the paper web, which has been formed on the round cylinder screen by means of the wire L.

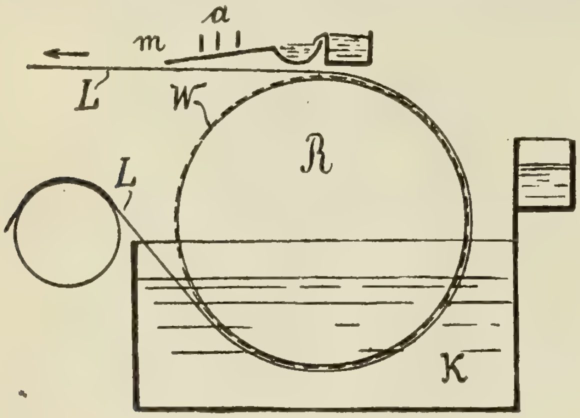


Fig. 3

Crepe Paper

Crepe paper can also be manufactured by means of the arrangement which is shown in Fig. 3. In this case the piece of oilcloth W is removed. As is well known, a circular screen takes the fibers up in a different direction from the fourdrinier wire. The two paper webs, which are joined together at *m*, then possess fibers which lie in directions considerably different from one another whereat the crepe effect is produced.

Velour Paper

In order to manufacture the so-called velour papers by the aid of the apparatus, which is shown in Fig. 3, finely ground clipped hair which has been worked up thoroughly in the hollander—no wood flour or particles of fabric are added—is fed to the stuff-box in which the cylinder R turns. The wire L, which runs around the cylinder R, takes up a layer of this hair, the suction removing the water. The hair web unites with the regular paper web at *m*. In this manner a paper is made which has the appearance of plush or velvet.

IV. Colored Marbling Under the Influence of Heat

In Ger. Pat. No. 283,690 is a process for producing colored marbling effects on paper. This process depends on the observation that the color solutions, which are brought on the surface of the paper, in particular such solutions of aniline colors, can be changed by the influence of heat during drying. It was also observed that under these conditions a mixture of colors, consisting of dyes of different specific weights, when brought on the paper, will tend to be split up into the individual constituents. For this purpose two or more colors are mixed together and the mixture is applied to the entire surface of the paper or in spots. Thereupon the paper, which is still in the wet condition, is dried with the uncolored side on a heated cylinder, which is provided with any desirable embossed design, or on a plate of similar nature. The drying of the parts of the paper which are in direct contact with the embossed design on the roll takes place faster, as may be expected; that is, more heat is applied to the paper from these high spots on the embossed roll than to the other parts of the paper. In this manner the color on the paper is caused to take the design that is embossed on the roll and at the same time it undergoes a decided change, due to the resulting strong contraction of the dye mixture. At the same time that the color on the paper in places corresponding to the embossed design on the roll is being changed by the heat, the rest of the color on the paper forms itself more or less accurately around the design on the paper. The latter action is enhanced particularly by placing the paper, which is colored with the wet dye, unevenly over the embossed roll; thorough moistening of the paper is also advantageous.

When this is done part of the aqueous solution of the color runs into the depressions, whereat there are no places on the paper which are more or less free from color and also in these depressions room is given to the color mixture to separate into its various parts. Moreover, during the process parts of the coloring matter that is on the paper are dried at spots, particularly through the heat which streams from the corner edges of the embossed design on the roll; this again induces new actions to take place. In this manner there is, accordingly, obtained variegated colored designs of a plastic appearance in accordance with the number of colors used in the color mixture. The colors that are used for this purpose are the aniline dyestuffs, which are admirably well suited for coloring designs on paper by this process. These dyes vary somewhat in specific weight, and although this is very small, nevertheless it is sufficient for the purpose, as only a very slight difference in this property of the dyes is requisite to bring about the desired effects.

Coloring Paper at the First Drying Cylinder

In Ger. Pat. No. 289,688 there is described a very advantageous process for coloring paper on the paper-making machine. This is done by subjecting the colored paper web, which is only slightly dehydrated to pressure by means of an endless felt against the first drying cylinder, which is heated as strongly as in the regular process of paper-making. The result is the formation of blisters on the surface of the paper, and these blisters are colored either darker or lighter than the rest of the paper according to the nature of the dyestuffs used, due to their coming in contact with the hot surface of the drying cylinder while the rest of the paper does not. In this manner marbling effects and designs are produced on one side of the paper only, but they are visible from both sides.

Description of the Apparatus

In Fig 4, there is shown a method of arranging the apparatus for carrying out this process. The paper web *c*, which comes out of the wet press *a b*, is led over guide rolls *d* and *e* to the drying cylinder *f*, to which steam is fed at a comparatively high pressure and whose surface is consequently strongly heated. The paper passes through the free air in reaching this drying cylinder. Then it is pressed up against the heated surface of the cylinder for a short time only. This is accomplished by the aid of a felt which is seen at *h*, which is wound tightly around a roll *g*. Pressure is applied against the paper web by means of this roll, so that the contact between the paper web and the heated surface of the cylinder is a very close one. The amount of pressure that is applied by the felt is regulated by means of weights which are arranged on a lever arm and which cause the roll to press against the felt with varying pressure in accordance with the weight that rests on the lever. Consequently, the felt can be made to exert a greater or less pressure against the paper web in accordance with the marbling effects that it is desired to produce and the thickness of the paper. The longer or shorter the time the paper web runs over the drying cylinder before it comes in contact with the pressure felt, the smaller or larger the blisters that are formed on the paper and, correspondingly, the smaller or larger the size of the marbling designs. In order to be able to change this factor during the operation of the paper-making machine, the paper web guide roll *e* is made so that it can be shifted in any desirable direction by means of the device *i*. The drying cylinder can be used without any covering, or else, as in indicated in the figure, it can be covered with a felt.

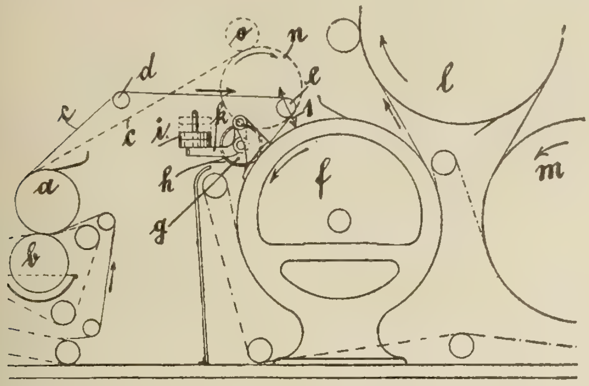


Fig. 4

In the place of the cylinders, any of which can be used for the marbling operation, all being of the identical regular size, it is also possible to use a special small cylinder *n*, which is provided with a pressure felt and a pressure roll *o*. These are represented in dotted lines in the figure.

KEEP POSTED

Any man to become a real success and a power in his particular trade or profession should at least strive to know a little about almost everything and everything about some one thing in particular — preferably the trade or profession in which he is engaged.

This assertion is by no means a new and orignal thought with the author but has been passed along from generation to generation by the world's most learned men, and recognized as one of the prime requisite teachings to be learned by all men who harbor an ambition to become leaders in their particular calling.

In order to get the greatest amount of real downright enjoyment out of life, and in order to make the greatest success, man must have a diversified knowledge. In other words he should have a general smattering of information at hand on the many live topics of the day, interesting the world at large, so that he is not hopelessly lost when these subjects are brought up for conversation by others from time to time. By "live topics" we do not mean current events particularly, but in addition the arts and sciences and worth-while things of the day that the leaders of civilization are interested in and continually trying to enlighten others on .

In addition to this general knowledge of the more worth-while things of life, the ambitious and successful man will allow no stone to go unturned in his efforts to gain every bit of available information about his particular job or profession. In this way he eventually becomes an expert in one particular thing and at the same time has not allowed himself to get into a rut, losing interest in all else outside of his own work and enjoyment.

Too many of us allow ourselves to consider our job only as a means to an end — namely, a means of support and nothing more. We do as little as possible, draw our pay envelope each week, and then think that we have contributed our share to civilization and society. The hours we spend outside of the shop or office are simply frittered away in a vain endeavour to amuse ourselves in ways which pay us no reuturns outside of the immediate present.

Instead of reading good books and the better class of magazines; keeping ourselves posted on current events and world happenings so that we can converse intelligently about them; instead of reading about the leaders of industry, invention and science, and learning the methods employed by them in reaching their goal of success; and instead of having a hobby during our spare hours in which we can make use of our initiative and ingenuity and thereby get good downright pleasure and enjoyment as well as sound healthy exercise, we read cheap fiction and the cheaper class of magazines, written only to amuse for the moment with no vestige of education or instruction in them; we glance hurriedly over the newspapers, taking in the headlines only and occasionally reading some sensational news story written to attract attention and to sell the paper only, or else glance at the sport page to see "how many home runs Babe Ruth got yesterday" or "how many rounds Kid Knock-'em-stiff lasted."

We read nothing whatever about science, invention, industry and the like, and know little or nothing about what the great men of the day are accomplishing in statesmanship or industry, or how they did it; and most of our spare time is simply is wasted in foolish and oftentimes expensive play, (or what we choose to call play and amusement). Too often we spend our spare time doing nothing that benefits us. Dancing, card parties, joy-riding, movies, silly chatter about nothing, and such, and all too soon our time has been frittered away with nothing to show for it in gain.

Such things to a moderate degree are all right and necessary, but the man or woman who lives wholly for such things, and who gives no time to improving his or her mind will mighty soon find themselves in a rut with only an uncertain job and a limited income for the remainder of their lives. If you would succeed, KEEP POSTED, learn something new each day, about your job or your work, learn something about the other fellow and his job; also, read good books and magazines, brush up on current events and world happenings, take plenty of healthful exercise, choose good associates, get eight hours sleep each night, and above all else do not get into a rut and lose all ambition to advance yourself. If you will do these things your employer will notice that you are above the average and will reward you sooner or later. —The *Editor, Mead Co-operation.*

The Institute of Industrial and Domestic Arts, Gardenvale, P. Q. conducts correspondence instruction in Pulp and Paper Making.

IROQUOIS FALLS TO BE FLYLESS

The following extract from an article in the Toronto Star by Dr. F. J. Donnelly, M. O. H. of Iroquois Falls, Ont., is worthy of careful consideration. It is this kind of community housekeeping that makes the home town of the Abitibi Power and Paper Co. such an attractive place.—Ed.

During the summer of 1921, experimental work on fly control was carried on at Iroquois Falls, Ont. This is the first time in the history of Canadian Sanitation that such a program has been attempted on a community basis. This town was chosen because of its high standards of sanitation, being superior in this respect to other towns in Ontario, and also a place where the work and its effects could be readily noticed. Unlike all other campaigns to remove the fly, it did not resort to the mere practice of swatting the fly, but consisted of methods which were more practical; more easily controlled and followed with better results. It consisted in destroying the fly in the egg or larval stage of development; removing the breeding places and trapping the flies already free: The results have shown that flies can be controlled and the community freed from these carriers of filth and disease. The time probably come when the Sanitary conditions of a place will be judged not only on the appearances, but more particularly on the number of free flies present.

Flies to become a nuisance must have breeding grounds. These places are common to every community. In Iroquois Falls they were easily located. They were the stables, which are the chief breeding places of the common house fly. It is here that the fly lays its eggs which soon develop into adult flies and invade the house. The blow fly shows a special preference for meat and also for the garbage cans, so that the common places of breeding were the manure heaps and the garbage cans.

Method of Warfare

During the summer of 1921 all the known methods of fly control were experimented upon. This included the large number of disinfectants which were considered of value and also the maggot traps but none were found satisfactory. The problem was to find a suitable larvacide and also some means of removing the adult fly before it could lay its eggs. Finally after many experiments a larvacide was found that was practical. The employment of baited traps of the conical type answered the other purpose. The method of using these agencies is as follows: The manure is sprayed daily with a 4 per cent. solution of the larvacide until it is well moistened. In order to trap the adult flies the conical traps are placed in the sunlight and in the immediate vicinity of the breeding places. They are baited with either meat for blow flies or a molasses solution for the ordinary flies. A solution of one part of molasses to three parts of water answers the purpose well. The traps serve a double purpose. They not only catch the free flies, but they give a check on the action of the disinfectant on the larvae. This system has been followed this summer and has given good results.

The eradication of the fly is a common interest and as such it might be of interest to mention some of the precautions that might be taken to aid the work.

Precautions.

1. Keep all garbage cans well covered. Allow no acmulation of garbage about the premises. Either burn such or put it in the garbage can.

2. If flies get into the house use a solution of formaldehyde as follows three teaspoonfuls of formaldehyde to a pint of water, and add a little sugar to sweeten it. Flies are thirsty insects.

The work on fly control has been of great assistance not only in getting rid of the flies, but it has brought to light many insanitary conditions that were previously thought immovable and looked upon as a necessary evil. This applies chiefly to the loose way in which manure was handled and stored.

There is no doubt that in time complete fly control will become possible, just as the mosquito nuisance was overcome, so also will the fly meet the same fate. It is a disease carrier and as such should be controlled. The control of this nuisance does not call for any extra appreciable expense. The ordinary person can soon grasp the necessary requisites for the application of the method of control. It is an educational feature and one in which the general public will give their heartiest support. Moreover, the check on the flies is also very simple, and any person can be soon interested in it and taught to carry it out.

Iroquois Falls will soon be safely called the Flyless Town of Ontario.

STOCKS OF PULP IN U. S. ON AUGUST 1st

Comparing the stocks on hand at the pulp mills at the end of the month with their average daily production based on the reports covering the years 1917-1921, inclusive, the figures of the Federal Trade Commission show that:

Ground wood pulp stocks equal 41 days' average output.
News grade sulphite mill stocks equal 9 days' average output.
Bleached sulphite mill stocks equal 8 days' average output.
Easy Bleaching sulphite mill stocks equal 5 days' average output.
Mitscherlich sulphite mill stocks equal 6 days' average output.
Sulphate milll stocks equal 14 days' average output.
Soda pulp mill stocks equal 7 days' average output.
Mill stocks of "other than wood pulp" equal 12 days' average output.
Total mill stocks of all grades equal 22 days' average output.

In paper, the figures are:

Newsprint paper mill stocks equal 5 days' average output.
Bookpaper mill stocks equal 13 days' average output.
Paper Board mill stocks equal 10 days' average output.
Wrapping paper mill stocks equal 29 days' average output.
Bag paper mill stocks equal 7 days' average output.
Fine paper mill stocks equal 35 days' average output.
Tissue paper milll stocks equal 20 days' average output.
Hanging paper mill stocks equal 25 days' average output.
Felts and Building paper mill stocks equal 9 days' average output.
Miscellaneous paper mill stocks equal 26 days' average output.
Total paper mill stocks of all grades equal about 14 days' average output.

To get sense out of anything you must put some into it.

ROLL PAPER IN GREAT VARIETY DEMANDED

(A note from Cameron Machine Co.)

Those interested in a practical way, either in the manufacture of paper and board or in the selling of it, have noticed (under normal business conditions) an increasing demand by the average consumer for rolls of various sizes.

Some interesting facts may be had by reviewing briefly the commercial and manufacturing requirements for paper in rolls. These requirements may be roughly classified under two heads. In the one class, paper is consumed as a finished product and not manufactured into something else, such, for instance, as rolls required for:

Adding Machines
Autograph Registers
Auto Tire Wrappers
Bandages (Paper)
Barber Rolls
Bill Straps
Bread Wrap
Building Felt
Carnival Novelties
Carpet Lining
Case Lining
Cash Registers
Chewing Gum Wrapper
Cigarette Paper
Coin Wrappers
Confectionary Wrapper
Counter Rolls
Crepe Towels
Floor Lining
Furniture Wraps
Gummed Sealing Tape
Hand Rolls (Various)
Insulating Papers
Lining Paper
Mimeographs
Multigraphs
Music Rolls
New Rolls
Package Machines
Pattern Papers
Photographic Paper
Printers' Rolls
Ribbon Blocking Machines
Roofing Paper
Sales Register Rolls
Sealing Tape
Serpentine Rolls
Sheathing
Soap Wrappers
Stay Paper
Telegraph Tape
Ticker Tape
Tire Wrapper
Toilet Paper
Towelling Rolls
Tracing Paper
Transfer Papers

The other class includes uses for paper in rolls where the paper in this form can be handled more conveniently than in the form of sheets for the manufacture of paper products and articles requiring paper as part of their structure; such, for instance, as:

Bags
Blue Print Paper
Bottle Caps
Bottle Wraps
Box Stay
Carpet Yarn
Cartridges
Cement Sacks
Cloth Lined Paper
Coated Papers
Container Board
Cores
Corrugated Paper
Die Wipers
Dishes
Drinking Cups
Dry Batteries
Egg Crates and Boxes
Electric Cables
Electric Conduits
Embossed Paper
Emery Paper
Enameled Paper
Envelopes
Felt Saturating Paper
Fireworks
Flint Coated Paper
Flour Sacks
Fly Paper
Food Containers
Fuses
Garment Bags
Glazed Paper
Greaseproof Paper
Gummed Labels
Gummed Paper
Lace Papers
Lamp Wraps
Lead Pencil Paper
Lime Sacks
Mailing Tubes
Matches
Milk Bottle Caps
Odor Proof Paper
Oil Proof Paper
Oiled Papers
Paper Boxes, Cups, Pails
Paper Novelties
Paper Yarn
Pasteboard
Pin Tickets
Plaster Sacks
Sand Paper
Soda Straws
Straw Board Cores
Tag Stock
Tickets
Tubes
Twine (Paper)
Waxed Paper
Web Printing Rolls

There are many uses not included in the above partial lists, and new uses are constantly developing. Those connected with the Paper Industry in a practical way could greatly extend either of the above lists out of their own experience.

Customers requiring paper in roll form have come to be more and more critical as to the character of the rolls, aside from the quality of the paper. The result has been that those producing roll paper have had to meet a standard of accuracy which is constantly becoming more and more exacting, and also provide for increasing output.

To meet modern requirements, rolls must be compactly and evenly wound, accurate as to width, and of a degree of firmness best suited to the purposes of the user. In many cases they must be accurate as to diameter also, and in some cases accurate as to the lineal length of the paper in the rolls. The surface of the paper must be smooth and free from wrinkles, and the edges must be clean cut.

In developing efficient machines for handling the slitting and roll-winding process in Paper Mills, Paper Converting Plants and in the Warehouses of Wholesale Paper Merchants, Cameron Machine Company has always found sufficient opportunity for the exercise of all of the brains and muscle and accumulated experience that could be mustered together year by year, and have specialized in this line of work.

A permanent exhibit of specimens of rolls covering a wide range of commercial and manufacturing needs has been collected in the Company's show room. An inspection of this exhibit and the machines producing these rolls is cordially invited and would, no doubt, suggest new methods of labor and waste saving, or possibly new applications and new markets, or new ways of utilizing and marketing a by-product.

W. J. WALLACE RETIRES

Mr. E. Howard Smith, Jr., has been appointed manager of the Cornwall division of the Howard Smith Paper Mills, Limited, in succession to Mr. W.J. Wallace, who has been manager for about 40 years, and who has retired on a pension given by the Company.

MR. W. J. WALLACE

HE WANTS TO GET OUT OF HIS CELLAR
(From Lloyds Bank Monthly)

Genoa has come and gone, and what are the results? On the one hand it is claimed, with much vigour and excess of rhetoric, that it has been an unqualified triumph; on the other we are told, with equal emphasis, that it has proved an indubitable failure. The actual truth, as is so often the case, seems to lie between the two extremes. In comparison with the exalted ideas prevailing before the Conference met, the results appear very disappointing, but on the other hand progress has been made in the restoration of Europe, and some good has been done. Even if the danger of actual warfare is not as serious as the Prime Minister anticipated, the eight months' pact of non-aggression removes the fear of possible outbreaks, and, in addition, gives further time to the nations to get to understand more fully each other's problem and difficulties. The international conference of Central Banks of Issue, recommended by the Financial Commission of the Conference, and understood to be likely to include a representative of the United States, has enormous potentialities for a satisfactory solution of the economic problem. But in the main the Conference was faced with a situation strongly reminiscent of the well-known dilemma of the scholastics —the problem of the irresistible force and the immovable body; and it is not surprising that no definite solution could be reached. The question on which it really failed was how to bridge the gulf which separated the outlook of France on the one side and that of Russia on the other—a gulf considerably widened as the result of the Rapallo agreement between Russia and Germany. On the one side, France, with the legacy of 1870 and its devastated countryside the very poignancy outlook, but resolutely determined that its children of its grief perhaps preventing a really clear-sighted shall not have a similar experience, and that therefore, in the first place, the Treaty of Versailles shall not be varied in the slightest iota, and in the second place that all truck with the Soviet Government shall be refused. On the other side Russia, out of touch with realities, suspicious and sullen, expecting chicane and replying with cunning. How is it possible to reconcile the irreconcilable?

In a brillant article contributed to the second Reconstruction number of the *Manchester Guardian Commercial,* M, Hanotaux- a former Minister of Foreign Affairs for France, has set out the point of view of his country. He tells of the *maire* of his village whose home has been in ruins since 1914: "here am I passing my eighth year in my cellar." M. Manotaux states that what the mayor says is what every average Frenchman is saying—"*he wants to get out of his cellar.*" With equal truth it may be said that what every average Englishman, of whom some two millions are out of work, is saying is that he wants to get out of his cellar. So with Belgium, with Germany, with Poland, with Austria, with Russia and the rest—the average man everywhere wants to get out of his cellar. The fact that over three and a half years have passed since the war ended, and that man is still confined to his cellar, would apparently show that peace was framed on wrong lines. That Germany must pay, and to the utmost limit, for the wrongs of her rulers is practically agreed but three and a half years of "peace," and the results of the Genoa Conference, would appear to indicate that the Treaty of Versailles will afford no permanent settlement, and that some revision is urgently called for.

The crying need of the whole world to-day is faith. Without faith there can be no confidence between the nations, and without confidence all conferences and resolutions and schemes of alleviation or reconstruction will be useless. Without wishing to exhibit any sign of vainglory we think it will be agreed that, so far, Great Britain has shown the greatest amount of confidence. Genoa is a proof. Germany and Russia have yet to show themselves worthy of confidence, Germany that it is really sincerely trying to carry out its promises so far as that is humanly possible, and Russia that its word may be replied upon, and that it means to be honest. It is possible that the experiences of its representatives at Genoa will have brought its rulers to face, and perchance to accept, realities. This would mean an immense step forward in the growth of confidence. America must have confidence, and, making due allowance for the errors of to-day caused by the wrongs of yesterday, endeavour to understand that Europe really is trying to recover its sanity, and that it requires the help of the United states just as much at present as it did during the war. And France must have confidence that neither this country nor America will allow it to be a loser or sufferer, even if it does not stand for the literal carrying out of the Versailles policy. The French press says that the entente between France and Great Britain is dead. Between the Governments of the two countries it is within the realms of possibility that this is the case. But between the people the entente, is indestructible. The headstones of Etaples are sufficient witness.

The Toronto paper and printing trade regretted to learn this week of the death of John W. Norman, who up to two years ago, when ill-health necessitated his retirement, was secretary of the Southam Press. The late Mr. Norman, who was in his 67th year, was born and educated in Hamilton and in early manhood came to Toronto where he entered the employ of the Southam Press, with which firm he made rapid advancement. He was prominent in Masonic circles in Toronto.

A REAL FISHERMAN
When James Brown, proprietor of the J. L. Morrison Co., Toronto, goes fishing, he seldom returns empty handed.

Green's Slowness Tester

The Star Brass Manufacturing Co., of Boston, are announcing a new and improved design of the Standard Paper Stuff Slowness Tester from the drawings of Arthur B. Green, Management Engineer. The operating features of the instrument have not been altered from the model that has been in use now in many of the foremost paper and pulp mills and Government laboratories of the United States and Canada as standard equipment for a number of years, but the instrument has been considerably improved in point of convenience in handling and durability of construction.

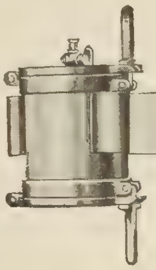
In the beating of paper stock, slowness is of course one of the important properties to be either developed or obviated, according as the character of the paper which is to be made may determine. It is, however, not the only property to be considered. Some of the other properties of stock from the standpoint of paper making are bursting strength, sizing, bulk, shrinkage in drying, formation, tearing strength, folding endurance, and others for which adequate tests are still undeveloped. The comprehensive study of beating must account for all of these properties, for it can be shown that they can be developed more or less independently with a given beating tackle, and the character of the resulting paper depends on the relative degree to which these various paper making properties are established in beating. For example, one kind of sheet can be made from a stock in which the slowness and shrinkage are high, bursting strength high, tearing strength and folding endurance low, and bulk low; whereas an entirely different character of sheet will result from the same stock if it has been beaten so that slowness, shrinkage, and bursting strength are low, tearing strength and folding endurance low, and bulk high. Similarly, the same degree of slowness will be found in stock that may result in high or low shrinkage, high or low bursting strength, high or low tearing strength or folding endurance, or high or low bulk. It is a great over-statement of the case to say that slowness alone will determine the extent to which stock has been beaten.

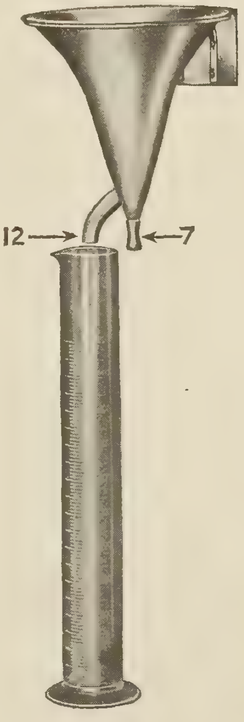
For a given class of papers, such for example as writings, slowness has important bearing on the sizing, yet from the standpoint of conducting the beating process, stock of exactly the same slowness, sized according to exactly the same formula, may have been beaten so that it is either well sized or comparatively slack sized. The comprehensive view of the matter is necessary if results are to be reached.

But it is not necessary to make exaggerated claims for the slowness test to indicate its great importance. In the effect of slowness upon the economy of operation of the Fourdrinier machine alone, the value of a measure of slowness can hardly be over-estimated; and in the conduct of the groundwood mill the factor of slowness is probably the chief governing variable.

Referring to the accompanying photograph of the Slowness Tester, attention is called particularly to the two-part construction, which enables absolute cleanliness in the funnel and discharge orifices to be maintained, allows of moistening the surfaces readily before performing the first test of the day, and provides the best method of starting the draining action. In the upper chamber there is a floor of standard perforated metal, forming a sieve immediately above the bottom lid of the chamber. Between this sieve and the upper lid there is capacity for exactly 1,000 grams of stock. The chamber it self is therefore the measuring vessel, and one weighing for a complete series of tests is all that is necessary. An ample quantity of stock is mixed to known density, based either on a bone-dry determination or on a centrifuge determination, the latter being the more rapid. Keeping the quantity thus mixed well stirred, the upper chamber is poured full with the lower lid clamped against its gasket. The upper lid is clamped tightly in place, with pet-cock open, after the operator has made sure that the sample is so well distributed in the chamber that its upper surface shows a creamy consistency. The density of stock usually adopted for the test is one-half of one percent.

As soon as the upper lid is seated, the pet-cock is closed, and the lower lid is released and allowed to swing back out of the way, thus exposing the entire area of the standard sieve. Atmospheric pressure holds the water from coming through the sieve until the pet-cock is opened. Thus the draining is started rapidly, but without shock, and without disturbance to the sample in the chamber. Furthermore, all of the area of the sieve is covered and in contact with the stock at the time draining is started, and the unit pressure is uniform at all points of the sieve.





During the period of the test while the rate of draining is in excess of the capacity of the standard orifice at the base of the funnel, there is an overflow discharged through the side orifice. The instant that the rate of draining through the sieve falls below the capacity of this standard orifice, the overflow through the side orifice ceases. This forms a simple automatic cut-off for the test and gives it a remarkably delicate end-point. It is only necessary to measure the water that has been discharged through the side orifice. The less this amount the slower the stock, and the greater this amount, the freer the stock.

The degree of slowness is expressed by the number of cubic centimeters of water collected from the side discharge, and is read directly from the graduated cylinder which is part of the equipment. Comparative figures, even with the same instrument, are possible only when the stock has the same consistency and temperature.

Tests can be performed at the rate of two each minute, and they are subject to an error of not more than two and one-half percent. An average of three is usually accurate enough for a practical determination, and in the laboratory an average of five may be preferred.

This standard slowness tester forms one unit of a set of instruments, all from designs by Mr. Green, which are in preparation for quantity production, and which are likewise built and sold by the Star Brass Manufacturing Co. There has been such consistent demand upon Mr. Green for these appliances, that quantity manufacture has been justified, and in the hands of the Star Brass Manufacturing Co. they will receive the very highest in workmanship and materials, and the very best service in their distribution. Patents are pending on the essential features of this improved slowness Tester. With the complete set of instruments, which will be announced in the near future, the mill management will have at its command all of the variety of tests upon stock that has been referred to above, constituting the most complete means of test and study on the treatment of paper stock that has ever been available.

TREND OF PRINTING SALES AND PAPER PURCHASES IN THE UNITED STATES

In his letter and memo sent out with the August chart of the American Writing Paper Co., showing the trend of the principal factors in the printing trades, Mr. Jos. A. Borden, Director of General Service, says:

Paper is third on a list of the chief staples of our daily life, flour and meat preceding it; so with the importance of this commodity, with the necessity for its use, we don't know of any industry whose prospect for the future is more needful of the closest scrutiny.

The printer can best serve his customer by being familiar with the commodities entering into the printed job and it can only be through the closet co-operation on his part, in the way of promptly sending in his figures each month that will enable us to continue issuing this Graphic Chart, showing conditions as they exist.

The figures as compiled from individual reports for the month of June show a considerable dropping off from the high points reached in March and May of this year.

Undoubtedly the rail and mine strikes have had some effect on the printing industry as well as practically every other industry. To what extent the falling off in business as shown by the chart is actually due to these strikes can only be surmised, but it is reasonable to assume that one of the first places where the average manufacturer or merchant will start to curtail is on his advertising, from which he sees no immediate return. It is quite true that this in many cases is mistaken policy, but we are inclined to believe, however, that the facts are as stated. Another factor to take into consideration is the natural falling off during the Summer months. It was hardly expected that this would come in evidence until July but, evidently, such is the case.

It is very safe to predict that a settlement of the strikes will be followed with a small business boom, the results of which will be amply reflected in the printing business.

The reports used in preparing this chart were submitted by representative Printing and Lithographing concerns located in the various cities of 41 states.

GEORGE McKEE RESIGNS POSITION

Mr. George McKee has resigned as managing director of the Donnacona Paper Co. His duties are being carried by Mr. Robert S. Kernan, who has been manager of the Woods Department, and who is chairman of the Woodlands Section of the Canadian Pulp and Paper Association. Mr. McKee, who has been the main spring and balance wheel of the Donnacona Paper Co. since it was only an idea, and who laid out, built and developed the magnificent plant at Donnacona, is president of the Association. He retains an important connection with his company. He was recently honored by being inducted into the Mohawk tribe of the Iroquois Indians as Chief Donnacona.

MR. GEORGE McKEE

Rumors are, of course, going round as to his future, but we are informed that Mr. McKee has made no definite arrangements as yet. He is now enjoying a holiday at his delightful camp in the Quebec woods.

"THE MANUFACTURE OF PAPER CONTAINERS"

The book is published by Verstone & Co., 29 Ludgate Hill, London, E. C. 4. and may by ordered from The Pulp & Paper Magazine at $2.75 net per copy.

An unusual interest attaches to the publication of "The Manufacture of Paper Containers" because it is the first English text book dealing with each process in the making of every kind of paper box or bag. It contains nearly 300 pages of practical information written in simple language, and illustrated with over 100 technical diagrams and designs, and over 60 representative types of the machines required.

This volume should be of equal value not only to factory owner and employee but to the technical instructor and student, since it has been compiled from the most authoritative records. The contents include such items as the Raw Material for both boxes and bags; Making all kinds of Rigid and Folding boxes, used as food containers, packing cases, etc., Paper bag making, and numerous other auxiliary subjects, not the least of which is an ample Glossary with cross references.

PULP AND PAPER NEWS

Mr. W. Innes, Montreal representative of the Interlake Tissue Mills, Limited, is spending a holiday in Toronto.

Considerable progress is being made with the construction of the mill at Three Rivers of the St. Lawrence Paper Mills, Limited. The contractors are ahead of the schedule. A large part of the steel is now erected.

Our sympathy is extended to Mr. Henri Rolland, manager of the manufacturing department of the St. Jerome mill of the Rolland Paper Company, Limited, on the death of his wife, aged 50. Mrs. Rolland died at the Hotel Dieu, Montreal, following an operation for appendicitis.

Mr. Gerald Smith, engineer in charge of construction of the improvements at the Cornwall plant of the Howard Smith Paper Mills, Limited, resigned on completion of the pulp mill and bleaching plant. On the occasion of his leaving, Mr. Smith was presented with an engraved gold watch by the employers of the Company and friends at Cornwall, and also with a case of pipes by the chief engineer and staff of the boiler room.

Mr. Legge who has been with the Lincoln Paper Mills at Merritton, Ontario (in charge of beaters and color work), has moved to Niagara Falls, New York, where he is employed by the International Paper Company as Superintendent of their beater room and color expert.

W. R. Sweeney, of Northern Securities, Limited, King Street, Toronto, has just returned to Toronto from a trip to Norway where he represented New York banking interests in connection with Norwegian pulp interests. During his visit agreements were made for the advancing of money to Norwegian interests in Newfoundland, which, it is expected, will be the means of furthering sulphite production in Newfoundland this winter.

A party of Toronto and Ontario school teachers, who have been touring Northern Ontario, were guests of a number of the big pulp and paper mills at Espanola, Iroquois Falls and other points in the North, when they were given a brief look at the process of paper and pulp manufacture. The party has returned to Toronto with a deeper impression of the importance of Canada's great industry.

President George H. Mead, of Dayton, Ohio: T. H. Watson, T. W. Sime and Lieut. Col. Thomas Gibson, left Toronto on Monday and were joined at Sturgeon Falls by George Gray, P. B. Wilson, Col. Jones, manager, and Charles E. Read. The party then proceeded to the various properties of the Spanish River Pulp and Paper Mills, Limited, at Sturgeon Falls, Espanola and Sault Ste. Marie on their annual inspection tour.

James Brown of the L. S. Morrison Co., Printing equipment, King Street, W., Toronto, is leaving shortly on a six weeks trip to the Old Country.

W. J. Gage & Co., Limited, the big Toronto manufacturing stationery firm, again had an attractive display in the Manufacturers' Building at the Canadian National Exhibition. The old windmill carried out the idea in its advertising of Holland Linen in which the firm specializes and other lines, also, were attractively displayed for the edification of those engaged in and interested in the paper trade. Another attractive display was that of the Dennison Manufacturing Co., makers of tags and paper and other specialties. The latter exhibit was in charge of R. D. Kennedy. The Toronto sales office is at 9 Wellington Street. Included in the exhibit was a full range of paper plates, luncheon sets, crepe paper rope, shelf paper, paper boxes, paper towels and handerchiefs, etc.

The Wilkinson Paper Company, Limited, 76 Bay Street, have been appointed sole agents for Canada for Messrs. Vandome, Titford & Co., Ltd., Saint Mary Axe, E. C. 3, London, Eng. This firm have been established for over two hundred years and are manufacturers of very high grade quadrant paper balances. These scales are made for determining the weight of a ream of any size paper, from a small sample or from the full sheet. They are manufactured in the larger size for use in paper mills, by paper dealers, envelope manufacturers etc., and also in the convenient pocket size which is found to be of great service to commercial travellers handling paper. The Wilkinson Paper Co., Limited, are carrying stocks at their warehouse in Toronto of both the large size and the pocket scales.

Enquiry at the head office of the Spanish River Pulp and Paper Mills, Limited, Bank of Hamilton Building, Toronto, reveals the fact that the three paper mills of the company at Sault Ste. Marie, Espanola and Sturgeon Falls are operating 24 hours daily in order to keep up with the demand for paper. Usually at this time of year the company have been able to stock a certain proportion of their production for winter supply, but so far this year their entire production has been shipped out.

A particularly interesting and instructive display at the National Exhibition this year is that of the Diamond State Fibre Co of Canada, Limited, whose exhibit is in the Industrial Building. The instructive feature lies in the illustration by picture and process of how the raw rags are transformed into Diamond Fibre, which, it is claimed, make it superior for many purposes, to steel, brass, iron, tin, wood, hard rubber, leather etc. Almost like aluminum, Diamond Fibre is claimed to be tougher than horn, almost as hard as iron and no ordinary force can cause it to dent. Its tensile strength is approximately 12,000 to 15,000 pounds per square inch. Many samples of the firm's products are on display with J. A. Regan and T. J. McFadden, from the Toronto plant at 235 Carlaw Avenue, in charge. A. G. Allan, of Paper Sales, Limited, Colonial Building, King Street, Toronto, returned this week from Montreal after establishing the company's Montreal office.

J. G. Gibson, of Toronto, Secretary-Treasurer of the Spanish River Pulp and Paper Mills, Limited, is receiving the congratulations of his many friends in the pulp and paper trade on the arrival of a son.

H.W. Guettler, of Chicago, President of the Canadian Barking Drum Company, spent a couple of days in Toronto this week. Mr. Guettler reports have received contracts within the past ten days for drums for the Ontario Paper Company, Thorold and the Peshtigo Paper Co., Peshtigo, Wis.

P. Swanson, of Timmins, Ont., who recently won the first prize of $500 in the Barnjum Practical Forestry Competition, is now on a prospecting trip throughout Northern Ontario. His last work in conducting woods operations was in taking out three thousand cords of pulpwood during the winter of 1920-21 for the Mattagami Pulp and Paper Co.

Technical Section

REVIEW OF RECENT LITERATURE

H. Bleaching, Bleach Manufacturing and Equipment

H-O Effect of Bleaching on Fibers. E. SUTERMEISTER. **Paper Ind.** xxiii, 1640-45, (March 1922). -As a rule, the more bleach a fiber requires the greater is the loss in weight in bleaching. When a given amount of bleach is added to pulp to act till it is completely exhausted, the loss in weight decreases with rising temperature. When an excess of bleach is added to the pulp and the excess is removed by washing at the end of a definite period, higher temperatures cause more loss in weight because more bleach is used up under these conditions. According to Schwalbe, acid bleaching attacks the fiber more than alkaline bleaching. Comparative tests carried out on hypochlorite and permanganate bleaching indicate that in the case of chemical wood pulps the oxygen evolved by the two substances has the same bleaching power. Contrary to Frohberg, the author finds that bleaching increases the strength of sulphite fiber even when the color produced is much whiter than that usually accepted by the trade as satisfactory. While the very white fibers are stronger than the unbleached, overbleaching tends to lower the strength from the maximum reached by the normally bleached material. With soda fiber there seems to be a decrease in strength as bleaching proceeds, if judgment is based on the beaten fibers, while the unbeaten fibers show an increase in strength. This probably indicates that soda poplar after bleaching is in such a plastic condition that the unbeaten fibers tend to cohere to a certain extent, but that they have been so changed that beating causes them to disintegrate much more than usual. Pulps bleached to a normal color with hypochlorite and then further bleached with permanganate are superior in color and have better folding and bursting strength than those bleached with an excessive amount of hypochlorite. Determinations of hydro- and oxycelluloses (copper number, loss on boiling with sodium hydroxide, caustic soda consumed) on unbleached No. 1 and No. 2 sulphite and soda poplar and on the same pulps bleached with various amounts of hypochlorite and with hypochlorite and permanganate showed that with sulphite the results obtained with hypochlorite and permanganate are not much different from those obtained by bleaching to the same color with hypochlorite alone, but with soda poplar the permanganate attacks the pulp much less strongly than does hypochlorite. The effect of oxycellulose on the color and strength of paper was investigated by adding 10 to 20 per cent. of oxycellulose to sulphite spruce fiber and making into hand-mold sheets. No injurious effects could be noted. Incomplete removal of the dissolved organic matter from the bleached fiber causes the latter to be yellower than if it were thoroughly washed, but the substances which remain with the fiber do not act upon it destructively nor do they cause a progressive lowering of the color. (See next abstract,) -A. P. -C.

H-O How Bleaching Affects the Strength of Fibers. E. SUTERMEISTER. **Paper Ind.** iv, 517-522, (July 1922); -A detailed description is given of the manner and conditions under which were conducted bursting (Ashcroft), tearing (Elmendorf), and folding (Schopper) strength tests on six samples of sulphite, three of soda and one of kraft which had been bleached with increasing amounts of bleach. The results obtained (except those for kraft) are shown graphically. The **bursting strength** of soda and sulphite bleached with 3 to 4 per cent. of bleach (and of kraft bleached with 8 per cent.) is lower than that of the unbleached fiber. When more bleach is used, the strength of sulphite and kraft increases until it is greater than that of the unbleached fiber. Finally, there is a dropping off in strength with most of the sulphite, though in one or cases there seems to be a continuous increase in stren even when bleaching is carried considerably bey standard color. The bursting strength of sulphite bleached to standard color is invariably greater than that of unbleached pulp. With kraft, maximum strength was reached with about 32 per cent. bleach. Soda showed a slight gain in strength, but in no case was the bleached fiber as strong as the unbleached. There is then a further decline in strength. The **tearing strength** of soda decreases quite rapidly and regularly with increase in the amount of bleach used. Three samples of sulphite at first increase in strength and then decrease so that the strength of the overbleached fiber is less than that of the unbleached. Two sulphites increase in strength very slightly with small amounts of bleach and then decrease more gradually than the other three. The averages of the tearing tests of the six sulphites bleached to standard color is the same, within 1 g., as that of the unbleached fibers. The kraft closely resembles the first group of sulphites. In the case of **folding strength,** the curves for sulphite are somewhat similar to the bursting strength curves (one sample behaved irregularly). The folding strength of soda decreases cinsistently as bleaching proceeds, until the most overbleached fiber has practically no folding strength. Kraft resembles sulphite more closely than soda. Bleaching sulphite to standard color gives practically maximum bursting and folding strengths. The author contrasts the method used by himself with that used by Frohberg **(Wochbl. Papierfabr.** xliv, 3599, 1913) and is unable to explain an actual reversal in the results obtained. -A. P. -C.

K. -Paper Manufacturing and Equipment

K-12 Wire Changing Device for Paper Machines. A. ALDRICH. Can. patents 221,197 and 221,198, July 25, 1922. The table is arranged to be run bodily in a lateral direction, provision being made for lifting and moving forward the front edge and for supporting and permitting the forward movement of the rear edge of the table. The new wire can then be stretched and placed in the usual position around the space normally occupied by the table, after which the latter may be moved back to its normal position, passing between the upper and lower reaches of the wire. -A. P. -C.

K-12 Watermarking Apparatus. E. P. KLUND and H. F. OBERMANNS, assignors to HAMMERMILL PAPER CO. Can. patent 219,428, June 6, 1922. The sheet is raised up against the front of one of the upper press rolls, thereby presenting the wire face to the action of the watermarking devices, which are made of rubber or other resilient material. The patent also covers improvements in the mechanism for mounting and adjusting the watermarking rolls. -A. P. -C.

K-12 Method of Watermarking Paper. W. S. LUCEY, assignor to HAMMERMILL PAPER CO. Can. patent 219,427, June 6, 1922. The sheet is watermarked (preferably on the lower or wire side) at some point between the couch roll and the last press, so as to flatten down even with the surface of the sheet any portions of the mark projecting above the surface of the sheet. -A. P. -C.

K-12 Method of and Apparatus for Drying Paper. L. E. MILKEY. Can. patent 221,120, July 18, 1922.- Same as U. S. A. patent 1,387,061, Aug. 9, 1921. See this journal xx, 442, May 25, 1922.

K-12 Wire Changing Device for Paper Machines. A. ALDRICH and A. L. LARSON. Can. patent 221,701, Aug. 1, 1922. The patent covers various details for facilitating the changing of wire by running out the table bodily.

K-12 Paper Machine Accessory. S. S. MILLER. Can. patent 221,306, July 25, 1922. A guard or collector, wider than the deckle strap, is placed just back of the deckle pulley (near the couch roll), and any water or pulp which adheres to the deckle strap is collected by means of a small roller and a doctor and eliminated by the collector. -A. P. -C.

K-12 Sealing Device for Vacuum Drying Chamber. O. MINTON. Can. patents 221,588 to 221,592, inc., Aug. 1, 1922. These patents cover various devices for sealing vacuum chambers, for use in connection with Minton's method of vacuum drying of paper covered by Canadian patents 204,316 to 204, 319, ins., Sept. 28, 1920. See **Pulp and Paper** xix, 283, March 10, 1921, 517, May 12, 1921. -A. P. -C.

K-12 Steam Circulating and Regenerating System for Paper Machine Dryers. J. O. WOODSOME and J. H. SWAN. Can. patent 221,536, Aug. 1, 1922. The steam supply header is divided into a suitable number of sections by means of differential pressure regulators. The steam is admitted to the dryers through suitable fittings and the condensate passes out through the same trunnion as the steam inlet and through an ejector back into the supply header. The superheated steam or water used for operating the ejectors is of sufficient temperature to insure the regeneration of steam from the condensate. The differential regulators control the temperature in the dryer section by insuring successive drops in steam pressure, and also act similarly to the ejectors by causing the condensate to flash back into steam when the steam passes from one section to the next. -A. P. -C.

K-14 Paper Embossing Machine. C. H. V. SMITH. Can. patent 217,642, April 11, 1922. The device consists of a frame carrying a pair of driven rolls, each of which is recessed and carries in the recess a pair of spools, to which opposite ends of a strip of linen or other embossing element are secured. The linen is wound upon the spools and passes around each roll, so that the surface of the latter is covered. Means are provided for automatically revolving the spools at any predetermined speed relatively to the embossing rolls, so as to shift the embossing medium over the rolls and render the wear uniform throughout the length of each linen strip. Means are also provided for reversing the movement of the linen strip and for tightening them around the rolls. -A. P. -C.

K-14 Apparatus for Extracting and Folding Sheets of Paper. R. BRAUNSTEIN. Can. patent 219,221, June 6, 1922. Same as Fr. patent 517,648. -A. P. -C.

K-14 Apparatus for Extracting and Folding Sheets of Paper. R. BRAUNSTEIN. Can. patent 219,222, June 6, 1922. The apparatus consists of a pair of parallel cylinders, the upper surface of which turn inwardly toward each other. The surfaces of the cylinders are smooth, except that each has a longitudinal strip provided with a gripping surface, which engage the sheets of paper from the bottom of the magazine, draw them in, fold them on passing between the cylinders, and allow them to fall in a suitable receptacle. The action of the gripping surfaces may be supplemented by that of suction. -A. P. -C.

K-14 Sheet Feeding Mechanism. C. E. CHRISTOPHEL, assignor to DEXTER FOLDER CO. Can. patent 219,759, June 20, 1922. The patent covers a device for feeding sheets of paper one by one from a pile, and is specially adapted for use with thin or flimsy paper which is easily mutilated or mussed. -A. P. -C.

K-14 Sheet Feeding Machine. C. E. CHRISTOPHEL, assignor to DEXTER FOLDER CO. Can. patent 220,751, July 11, 1922. -A. P. -C.

K-14 Machine for Making Interfolded Paper Packages. S. WHEELER. Can. patent 219,089, May 30, 1922. -A. P. -C.

K-14 Paper Folding Machine. A. OLSON, assignor to TORONTO TYPE FOUNDRY CO. Can. patent 220,794, July 11, 1922. -A. P. -C.

K-14 Sheet Feeding Apparatus for Paper Sorting Machine. G. SPIESS. Can. patent 219,086, June 20, 1922. -A. P. -C.

K-14 Slitter and Rewinder Attachment. R. McCUTCHEON, assignor to CAMERON MACHINE CO. Can. patents 219,953 and 219,954, June 20, 1922.

219,953. To prevent or rectify longitudinal irregularities in the web, which tend to produce overlapping or interweaving of adjacent rolls, the paper is passed over a roller having relatively wide and shallow circumferential grooves, straight or (preferably) sinuous, or inclined to the axis at an angle other than 90°, but which do not wind helically around the roll.

219,354. The roll has longitudinal, straight or sinuous, grooves. -A. P. -C.

K-18 Pulp Board. D. M. SUTHERLAND, JR. Can. patent 219,509, June 13, 1922. Pulp board is usually made by running pulp, with or without the admixture of a binder, into a mold, pressing to remove as much water as possible, removing the remaining water by drying and finally subjecting to combined heat and pressure. According to the invention, the board is subjected to the final hot pressing in an air-dry instead of bone-dry condition, care being taken to reduce the temperature below 212° F. before releasing the pressure. It is claimed that an increase of up to 67 per cent. in tensile strength and toughness is thus obtained. -A. P. -C.

K-21 Reinforced Roofing. R. E. MOIST. Can. patent 220,-378, July 4, 1922. -The roofing consists of an inner and outer ply composed of cotton, wool, linen, silk, oil, coal tar products, asbestos, wood pulp, rubber and asphalt between which is a wire cloth. The inner surface is smooth and the outer surface is rough (like sand paper). -A. P. -C.

K-21 Roofing Shingle and Machine for Making Same. A. S. SPEER, assignor to ROOFING PATENTS CO. Can. patents 220,780 to 220,782, inc., July 11, 1922. -A. P. -C.

K-21 Asphalt Saturating Machine for Roofing Felt. H. M. NICHOLLS. Can. patent 220,683, July 11, 1922. -Means are provided for raising or lowering one end of each of the rolls immersed in the asphalt so as to bring the felt back to its proper position when it creeps to either side of the rolls. -A. P. -C.

K-21 Prepared Roofing Shingles. C. E. RAHR and C. RUSSELL. Can. patent 220,877, July 18, 1922. Asphalt impregnated shingles which are faced with

(Continued on page 772)

UNITED STATES NOTES

A wage increase of 3 cents an hour to all employees receiving less than 54 cents an hour has been granted by the Hanna Paper Corporation and the St. Regis Paper Company. The advance has been made voluntarily by the management of the corporation in recognition of the fact that living costs have gone up for the workers. 800 of the 1100 men employed in the various divisions are affected by the increase which will mean a rise in pay-rolls of about $70,000 a year.

The West Virginia Pulp and Paper Company has added to its warehouse facilities in New York City by the purchase of a six story building at 604 to 610 West Thirty-ninth Street. The building has been the property of John S. Sills & Sons, wholesale grocers. It was taken subject to a mortgage of $150,000. The reported price was in the neighborhood of $350,000.

Employees in the paper box factories in New York City and vicinity are being rapidly recruited in a drive, recently begun, to build the Paper Box Makers' Union into a powerful organization. Henry Jager, the organizer, reports that organization mass meetings are bringing a large percentage of Metropolitan box makers into the union as members.

Frederick Bertuch, paper manufacturer and importer, whose death was reported in last week's *Pulp and Paper Magazine,* left an estate approximating $750,000. According to the terms of his will, which was filed for probate at Riverhead, L. I. last week, many gifts are yielded for charity. A number of New York institutions are made beneficiaries, among them Columbia University, which is made a bequest of $100,000 to be used in assisting needy students to pursue courses of study in any department of the university; Cooper Union, endowed with $50,000 for the advancement of science and art; $50,000 to the Children's Aid Society and a similar sum to the Society for the Prevention of Cruelty to Children. Smaller bequests are made about a dozen other charitable organizations. None of the bequests however, with the exception of $10,000 which is given outright to the widow, Mrs. Minnie Bertuch, who also receives the use of all realty and personal goods, is to be paid until the widow's reath. An interesting feature of the will is the bequest of the residue, after all gifts are made, to the Bowery Mission and the Young Men's Home as a fund for the maintenance of their bread line.

Work on the construction of a fourth unit of the Oregon Pulp and Paper Company's bond paper plant at Salem, Ore. has been started. If the company's present plans materialize, the addition will be in operation early next year, giving employment to 75 more men and bringing the total capacity of the mill up to a daily production of 100 tons of paper about $300,000 is being expended on the new unit. The Salem plant, which at the present time is the only bond paper mill operating on the Pacific Coast, now employs 300 men. Besides a paper-making machine there will be installed in the new unit additional beaters, Jordan, all necessary stock chests and finishing room machinery, such as trimmers, cutters, rewinders — in fact, a complete plant to make it possible to handle not only the new production, but also to round out the equipment already installed.

Comparative figures relating to wages and employment in 53 paper mills during July, 1921, and July, 1922, have been made available by the Bureau of Labor Statistics, United States Department of Labor. These figures show that there were 19,480 persons employed in 53 paper mills in July, 1921, increasing to 22,691 at work in the same factories in July, 1922, an increase of 16.5 per cent. The payrolls in these mills amounted to $475,635 in July, 1921, increasing to $522,726 in July, 1922, a gain of 9.9 per cent.

The William Mann Company of Philadelphia has placed on the market a light weight, closely formed sheet intended for use as a base in carbon manufacturing. The new product is the result of laboratory experimentation and mill experience extending over a long period. It is said to realize the firm's ideal of an American made product equalling or surpassing the imported. It is produced in rolls varying in sizes as low as 18 iniches and running up to large sizes, but with the average in 26-inch rolls.

One of the features at the Second Graphic Arts Exposition in Boston last week was the contrast in paper-making methods as shown in exhibits comprising the old hand process and the modern machine production. The latter process was interestingly shown by means of the American Writing Paper Company's baby Fourdrinier and miniature paper mill exhibit. This part of the show, as usual, drew the largest groups visitors. Leading New England concerns in the printing, paper and allied industries had booths. A complete laboratory, in charge of Miss Kiely, demonstrated chemical, physical and microscopic tests in connection with paper. The International Association of Printing House Craftsmen elected John J. Diviny president for the ensuing for the year. Mr. Diviny is Superintendent of the Government Printing Office in Washington. Unanimous endorsement of a plan to erect a permanent graphic arts building on the grounds of the 1926 sesquicentennial exposition at Philadelphia was given at the opening session of the convention.

The New York Times Company has sold its paper manufacturing plant, the Tidewater Paper Mill located at Bush Terminal, Brooklyn, to a syndicate composed of Perkins-Goodwin Company and Acer Paper Sales Company, Inc.

A banner representation from the paper and pulp section marked the Eleventh Annual Safety Congress of the National Safety Council which convened at Detroit last week. Men in the industry identified with safety work in the mills took a prominent part in the discussions, contributing papers on many phases of the safety problem. The meetings were the most largely attended since the organization of the safety council in 1913. The Technical Association of the pulp and paper industry, through its president, George E. Williamson, has been asked to co-operate with the Council in the preparation of a safety code for pulp and paper mills. The Engineering Standards Committee will also participate in the compilation of this code. It will apply to the inherent hazards peculiar to pulp and paper mills. The requirements applying to steam and electrical plants, machine shops, power transmission, etc., are dealt in special codes for each subject.

David I. Luke, resident of the West Virginia Pulp and Paper Company, has been elected to the board of directors of the bank of America, New York.

The Montreal Paper Club will resume its meetings in September.

Frank Thorn, sales manager of Price Bros., is spending a brief vacation ni Toronto with his wife and family.

British Trade News

(From Our London Correspondent)

August 21, 1922

Tributes from all parts of the globe reached London commenting on the great genius and influence of Lord Northcliffe, who was buried at Finchley, after an impressive funeral service held in Westminster Abbey, on Thursday, August 17. The large audience in the Abbey included many pulp and paper men. The Imperial Paper Mills was represented by Mr. Stanley Cousins, Mr. C. L. Stevens, two of the Directors, in addition to other minor officials; Sir Mayson Beeton, and Lieut Col Vincent Jones represented the Directors of the Anglo-Newfoundland Development Co. and the Directors of the Times Publishing Co., Ltd. in attendance were Mr. John Walter (chairman), Sir Campbell Stuart (deputy chairman), Mr. G. Brumwell, Mr. W. Lintz Smith, Mr. H. Wickham Steed, and Mr. Hubert Walter.

Lord Northcliffe, it will be recollected, in conjunction with his brother (Lord Rothermere) founded the Anglo-Newfoundland Development Co., Ltd. in 1905. The company now own 3,400 square miles in Newfoundland, with water power, railway, etc. The Imperial Paper Mills, at Gravesend, (England), also bears his name as a pioneer. They are today one of the largest and best mills in England.

Printers Dispute Over

The printers dispute is over. If the newspaper proprietors had agreed to Lord Northcliff's views there would have been no dispute. He was against it—and against cutting wages down. And he told the other newspaper owners his position. However, they insisted on the "cut" and the strike followed. One or two newspapers have "shut up shop," as a result, and the sellers of newsprint lost heavily. Fortunately for everybody the crisis is now over and business is the same as usual.

Lord Northcliffe believed in paying a good wage, but he wanted good qualities in return for it. He adopted that policy in all his undertakings, with the result that he could carry on many schemes at the same time. Of course his interest in pulp and paper only extended to getting supplies for the great newspapers and other schemes he controlled.

Newfoundland Supplies

One of the monuments to the memory of Lord Northcliffe is the pulp and paper industry in Newfoundland. For the past seven months, Jany.-July, Newfoundland has exported to England 21,971 tons 17 cwts of printing paper. The supplies for the corresponding period of 1921 were 16,383 1-2 tons, valued at £619,047 (compared with £606,037 for the last seven months.) During July no less than 219,610 cwts were shipped to England, the value recorder at £297,215. Of course most of the paper goes to the "Daily Mail," "Mirror", "Times", and other publications and surplus quantities are sold to other outside newspapers.

Jump in Pulp Imports

The total quantity of pulp received into the United Kingdom during the period Jany.-July was 414,041 tons—compared with 234,563 tons for same months in 1921. The supplies in July reached 108,791 tons, an increase of 52,820 tons over the corresponding month last year. Particulars of the totals are made up as follows:—Bleached sulphite 9,989 tons (7,768 tons for the seven months in 1921); Unbleached (dry) 123,590 tons (78,415 tons); Chemical, wet, 11,946 tons (1,070 tons). Groundwood (moist) 263,742 tons (146,683 tons). Groundwood, dry, 4,774 tons (1,227 tons).

Groundwood (moist) was received from the following countries:—Canada, 51,390 tons from Jany.-July, compared with 43,531 tons for the corresponding period (monthly supplies 22,314 tons July 1921; 29,539 tons July last); Sweden, 46,412 tons, compared with 1,444 tons for the corresponding period (1,000 tons July '21; 9,744 July last); Norway, 156,090 tons, compared with 100,456 tons for the corresponding period (monthly supplies 11,234 July 1921; 29,503 July 1922); Other countries 9,850 tons and 652 tons for 1921, making a total of 263,742 tons for the seven past months, compared with 146,683 tons in 1921.

Bleached Sulphite shipments for the 7 months are as follows:—From Finland 447 tons (51 tons 1921); Sweden, 2,984 tons (790 tons); Norway 5,310 tons (6,287 tons); Germany, 530 tons (140 tons); Canada 718 tons (500 tons).

Unbleached Chemical (dry)— From Finland, 24,209 tons (2,148 tons in 1921); Sweden, 59,569 tons (47,553 tons); Norway, 30,104 tons (18,898 tons); Germany, 1,176 tons (4,544 tons), Canada 8,532 tons (5,272 tons).

Pulp prices are quoted as follows today in London: —Bleached sulphite (No. 1.) £18 1-2; Easy bleaching, (No. 1.) £12 1-4; sulphite newsprint (strong) £11 1-2; Unbleached soda £11 1-2; Soda Kraft £11 1-2 £11 -3-4 Groundwood (wet) £4 to £4 1-4 for prompt delivery, unwrapped groundwood, dry, prompt £7. 17s.

It is stated by the Scandinavians that groundwood prices are advancing. The prices quoted by me prevail in London today and buyers will not pay more. One papermaker said there was plenty of groundwood if the mills wanted it.

Paper Imports and Exports

Supplies of newsprint and printing papers of high grades made in British mills for the Australian market have doubled.

Taking the imports of foreign paper and the exports of British paper, boards, etc. the figures at a glance are:—

	1922 Seven months	1921 Seven months
Exports,—cwts.	1,096,298	847,223
Imports—cwts.	5,641,041	3,249,022

The supplies of newsprint from Canada are on the increase, but in the case of packings and wrappings the supplies have gone up to 26,55 3-4 tons for 1922—528 tons in 1921.

The exports of the British mills have increased in packings and wrappings, newsprint and fine printings, writing paper, tissues, wallpapers.

Canada is buying more fine printings from the British mills than heretofore.

BETTER PAPER IS BETTER

"It's all we can afford," said the advertiser. "We've put the money into the quality of the goods. The price margin is small. We had to pay more than we meant to pay for the advertising copy and the cuts. We will have to save on the paper."

"Well, just for an argument," said the printer, "pick a thousand names from your list, and send the circular on the cheap paper. Pick another thousand and send it to them on this better paper. Then keep tabs on the results."

Fair enough. So ordered. The better paper brought in half again as much—yes sir, over one and a half times as much as the cheap.

crushed slate, etc., may vary in tint according to the angle from which they are viewed. According to the invention, one end of the shingle is notched or marked in such a way that they can all be laid in the same relative positions in which they are cut from the sheet in their manufacture, thus preventing the mottled appearance. -A. P. -C.

K-23 Machine for Marbling Paper. M. RHEINAUER. Can. patent 220.688, July 11, 1922. The size which carries the color is caused to move at a speed approximately equal to that of the paper across the whole width of the latter, which gives as even a marbling near the edges of the sheet as in the center. -A. P. -C.

K-23 Apparatus for Cleaning Coating or Glueing Machines. W. A. WEIGHTMAN and C. H. NITSCH, assignors to STOKES & SMITH CO. Can. patent 221,763, Aug. 1, 1922. To clean the coating or glue applying rollers, the pan containing the coating composition or glue is lowered and drawn away from the roller and a pan containing cleaning fluid is moved up in its place. The machine is then operated, carrying the cleaning fluid over the parts to be cleaned. -A. P. -C.

L. -Articles Produced from Pulp and Paper

L-4 Paper Walled Can. J. R. HARBECK, assignor to AMERICAN CAN CO. Can. patent 218,066, April 25, 1922. -A. P. -C.

L-4 Sheet Feeding Mechanism for Box Making Machines. G. W. SWIFT. Can. patent 219,740, June 20, 1922. -A. P. -C.

L-4 Paper Pail. J. H. HUGHES. Can. patent 220,023, June 27, 1922. -A. P. -C.

L-4 Paper Box Blank. V. E. LINDFORS. Can. patent 220,244, June 27, 1922. -A. P. -C.

L-4 Paper Box Machine. S. COOPER. Can. patent 220,331, July 4, 1922. -A. P. -C.

L-4 Machine for Making Reinforced Sanitary Cups. P. T. PETTS, assignor to VORTEX MANUFACTURING CO. Can. patents 221,170 and 221,171, July 18, 1922. -A. P. -C.

L-4 Folding Box. W. NESS. U. S. A. patent 1,346,839, July 20, 1920; Can. patent 221,319, July 25, 1922. -A. P. -C.

L-4 Composition for Coating Paper Containers. U. S. A. Patent 1, 414, 256, F. COATES, assignor to FEDERAL PRODUCTS CO., April 25, 1922. One part of gelatin is soaked for two hours at room temperature in two parts of water, the mixture is heated to 120°, and a mixture of one part of glucose and half a part of glycerin added. To this is slowly added a previously prepared mixture of 2 parts of water, 1.5 parts of glucose, 0.5 part of glycerin, and one part of acetone. The resultant mixture (at a temperature of 110° F. is applied in any desired manner. The resultant compound dries very slowly, has practically no tendency to sour, makes a highly efficient preservative and possesses an elasticity which makes it specially suitable for coating paper cans, etc. -A. P. -C.

L-4 Waterproof Fibrous Tubes. U. S. A. Patent 1, 396, 021, F. A. BURNINGHAM et al., Nov. 8, 1921. Fibrous materials, such as paper tubes, are impregnated with molten sulphur, which is allowed to cool and crystallise on the fiber. The material is then further impregnated with a solution of a phenol condensation product, which, after evaporation of the solvent, is polymerized by heat. -A. P. -C.

L-4 Method of Making Paper Containers. U. S. A. Patent 1, 413, 759, A. MOORE, assignor to CLARKE MOORE-CORPORATION, April 25, 1922. -A. P. -C.

L-4 Paper Box for Holding Tobacco ,Etc. U. S. A. Patent 1, 406, 707, F. J. WIESMANN, assignor to WEIS FIBER CONTAINER CORP., Feb. 14, 1922. -A. P. -C.

L-6 Machine for Molding and Drying Pulp Articles. E. V. RIVERS, assignor to R. HARVEY. Can. patent 218,980. -A. P. -C.

L-6 Method of and Apparatus for the Manufacture of Pulp Articles. E. V. RIVERS, assignor to R. HARVEY. Can.patents 218,981 and 218,982, May 23, 1922. The apparatus consists of a hollow mold structure provided with hollow side walls having perforated inner plates and imperforate outer plates, Means are provided for intermittently introducing pressure fluid on each side of the walls of the hollow mold section. When the article is of suitable thickness the mold is opened up to withdraw it. -A. P. -C.

L-7 Machine for the Manufacture of Paper Twine. P. R. HOAD. Can. patent 218,890, June 20, 1922. The patent covers a machine which takes the paper from the roll and slits, waterproofs, crimps, twists, and spools it into finished twine, without any handling. -A. P. -C.

L-7 Paper Pulp Strip Producing Machine. U. S. A. Patent 1, 411, 030, C. ISSENMANN, March 28, 1922. The strips of paper (for spinning) are reeled up directly from a moving surface of the paper machine, **e.g.**, from the strip distributing cylinder or from the felt apron or from an intermediate carrier roll, which contacts with the moving surface of the machine and also with the spool. The rotation of the spool or reel is obtained by direct contact with the strip carrier of the paper machine. -A. P. -C.

L-7 Thread Paper. Kunstoffe, x, 86-89, (1920) ; **Chem. Abs.,** xv, 3395, (Oct. 10, 1921). Some 33 uses are given for paper which is reinforced by the use of threads or wire. -A. P. -C.

L-0 Paper Tape and Process of Making It. U. S. A. Patent 1, 410, 745, B. W. GATES March 28, 1922. The edges of a flat strip of paper of suitable quality are rolled repeatedly upon themselves inward and backward, thus narrowing the strip to a fraction of its original width. The narrowed tape with rolled edges is then crushed while under tension and finally subjected to a very high pressure, the edges being restrained to prevent them from spreading. -A. P. -C.

L-0 Window-Envelope Making Machine. U. S. Patent 1, 411, 360, C. M. MEUNER, April 4, 1922. -A.P. -C.

L-0 Corrugated Paper Tubing. U. S. Patent 1, 412, 018, E. KELLER, April 4, 1922. -A. P. -C.

M. — General Equipment

M-4 Cotton Rope Drives. J M. ALISON, Wm. Kenyon & Sons. **Paper Ind.,** iii, 1537, 1539, (Feb. 1922). A discussion of the merits of cotton ropes as compared with manila ropes, of the advantages of three-strand over four-strand ropes, of the advisability of using angular (not curved) grooves and of polishing the grooves. -A. P. -C.

M-6 M-7 Electrical Development for the Pulp and Paper Mill. R. W. LEEPER, H. S. Taylor Ltd., Montreal. **Pulp and Paper,** xx, 245-248, (March 30, 1922) ; **Paper Trade J.,** lxxiv, No. 16, 28-32, (April 20, 1922) ; **Paper Mill,** xlv, No. 14, 105 ff., (April 15, 1922). A discussion of the use of electricity in the paper mill and of the advantages of motor drive. Selection of the proper kind of motor is important and a careful analysis of the load conditions must be made before the motor is chosen for the work. The lighting of the paper mill is also discussed and its importance on the efficiency of the employees and rate of production is explained. -I.G.

M-9 The Steel Belt Conveyor in the Pulp Mill. HARRY CARLSON. **Paper Ind.**, iii, 1386-1389, (Jan. 1922). The author describes a steel belt conveyor made by the Sandvik Steel Works, in Sweden, and describes its application in Swedish pulp mills, showing its advantages. -A. P. -C.

M-12 Flue Gas Testers. F. O. H. BINDER. **Chem. Ztg.**, xlvi, 149-151, (1921); **Chem. Abs.**, xvi, 1340, (May 10, 1922). Descriptions, with cuts, of (1) Schumacher's "Oekonometer", an apparatus in which the gas is weighed and the change in specific gravity due to varying amounts of carbon dioxide is recorded on a chart as $\%CO_2$; (2) Maihack's "Duplex-Mono", by means of which both the burned and unburned constituents of the gas are determined alternately, the first by direct absorption and the second by absorption after burning in a carbon monoxide furnace heated electrically; (3) the "Union gas tester", which depends on the relative friction resistance of the gas and air when passed through a narrow tube. -A. P. -C.

N. — Power Generating and Equipment

N-4 The Electric Steam Generator. HORACE DREVER and FRANK HODSON, Electric Furnace Construction Co. **Paper Trade J.**, lxxiv, No. 15, 249-255, (April 13, 1922); **Paper**, xxx, No. 7, 73-81, (April 19, 1922). A description of the principle of the water resistance type of electric steam generator and of the equipment developed by F. T. Kaelin, Montreal, Canada; together with a discussion of the merits of the apparatus and of its field of application. (See KAELIN — **Generation of Steam by Electricity.** This Journal xx, 549, June 29, 1922.) -A. P. -C.

N-4 Heat Economy at Peak Loads. DE GRAHL. **Z. angew. Chem.**, xxxv, 105-107, (1922); **Chem. Abs.**, xvi, 1823, (June 10, 1922). Special mention is made of the use of steam accumulators in the form of large tanks filled with hot water. These tanks are so arranged with reducing and controlling valves that they absorb heat with an increase in pressure during periods of low steam consumption, returning it to the low pressure mains as flash steam during periods of heavy demand for low pressure steam. Curves showing the application of the system to a pulp and paper mill are given. -A. P. -C.

N-4 Electric Steam Boiler. N. R. FORSSBLAD. Can. Patent 220,013, June 27, 1922. The electrodes are introduced through the bottom of the shell, instead of the top as usual. Better efficiency is claimed due to better circulation of the water, less agitation, and consequently dryer steam. -A. P. -C.

N-6 Electric Steam Boilers in the Paper Industry. J. M. DE PORTEMONT. **Papier**, xxv, 165-167, (April 1922). Brief discussion of the merits of electric steam boilers, with a description of the Bergeon-Fredet boiler. (See G. A. MAILLET, this journal, xix, 1175, 1197, Nov. 17 and 24, 1921.) -A. P. -C.

N-6 N-7 N-9 The Power Plant of the Paper Industry. A. G. DARLING and H. W. ROGERS. **Paper Trade J.**, lxxiv, No. 15, 179-183, (April 13, 1922); **Paper Mill**, xlv, No. 14, 60 J, l, n, (April 15, 1922); **Paper**, xxx, No. 17, 20-24, (April 19, 1922); **Paper Ind.**, iv, 87-90, (April 1922). An analysis of the heat and power demands in a pulp or paper mill and of the various methods which can be employed to balance the two requirements so as to obtain maximum efficiency and lowest cost. -A. P. -C.

N-7 Rack Cleaning Device for Head Races. I. W. JONES. Can. Patent 218,800, May 23, 1922. A car mounted on a track runs along the top of the dam. It carries a rake mounted to reciprocate up and down over the grating. On the upward movement it gathers debris from the grating and dumps it into a canal which lies between the track and the upstream side of the dam, a current of water flowing through the canal carrying away the rubbish. -A. P. -C.

M-7 Elimination of Waste in the Paper Industry due to Poor Lighting. H.T. SPAULING and R.A. PALMER, General Electric Co. **Paper Ind.**, iv, 61-64, (April 1922). A discussion of the importance of proper lighting in the paper mill increasing efficiency and cutting down cost of production. -A. P. -C.

N-7 Hydro-Electric Development as Applied to the Pulp and Paper Industry. W. L. BARROWS, H. S. Taylor Ltd., Montreal. **Pulp and Paper**, xx, 175-176 (March 9, 1922); **Paper**, xxx, No. 2, 7-9, (March 15, 1922). A discussion of the problems arising in the installation of a power development to supply either an existing plant or one that is to be built, showing how the demands on such a plant are very much different from those on almost all other power stations. -A. P. -C.

Q. — Planning and Construction

Q-0 Use of Creosoted Wood Block Floors in Pulp and Paper Mills. LAMBERT T. ERICSON, Jennison-Wright Co., Toledo, Ohio. **Pulp and Paper**, xx, 182, (March 9, 1922). The chief advantages of creosoted wood block floors are: . impervious to acid solutions, can be installed with waterproof bituminous binders forming a waterproof surface, stand up under the heaviest and most severe conditions of trucking, afford comfortable footing, non-conductors of heat, are easily repaired. They should be designed and installed by those who are expert in that line; but the ordinary workmen around plants can be easily instructed sufficiently for the general run of maintenance. -A. P. -C.

R. — General

R-4 Sales Mthods in the Paper Industry. HARRY R. WELLMAN. **Paper**, xxx, No. 9, 7-10, (May 3, 1922). -A discussion of present methods of distribution in the paper industry, which are shown to be archaic, with a plea for much-needed reforms in this field. -A. P. -C.

R-4 The Salesman as an Evangel for Good Business. LAURENCE H. SLOAN. **Paper Mill**, xlv, No. 14, 65-66, 80, (April 15, 1922); **Paper**, xxx, No. 7, 68-70, (April 19, 1922; **Paper Ind.**, iv, 76-78, (April 1922). A discussion of the importance for salesmen to study general business conditions, more particularly as a means of inspiring confidence in those with whom they deal and thus obtaining more business. -A. P. -C.

R-5 Pulp and Paper Manufacture in Finland. Paper, xxx, No. 8, 11-12, (April 26, 1922). Brief review of the history and present status of the pulp and paper industry in Finland. -A. P. -C.

R-5 Paper at its Lowest Level. R. P. ANDREWS. **Paper**, xxix, No. 25, 9-10, (Feb. 22, 1922). An analysis of conditions in the paper market and printing industry. -A. P. -C.

R-12 Power Costs in Paper Mill Accounting. B. C. GAUSE. **Paper**, xxix, No. 26, 7-8, (March 1, 1922). A brief discussion of the importance of ascertaining the correct power cost for inclusion in the detail cost of manufacturing. -A. P. -C.

R-0 Fundamental Chemistry in Paper Making. J.L.A. MacDONALD, D. S. O., D. Ss. **Paper**, xxix, 12-18, (Oct. 19, 1921); **Pulp and Paper**, xix, 1067-1069, (Oct. 20, 1921), 1120, (Nov. 3, 1921); **Paper Industry**, iii, 1112-1116, (Nov. 1921). A discussion of fundamental chemical research in the paper industry, taking as examples the importance of the constitution of cellulose in the cooking processes, and the importance of the mechanism of sizing and of the hydration of pulp in the beater. -A. P. -C.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, September 5.— "Never prophesy unless you know" is advice often given those who are inclined to venture on the dangerous ground of prediction. It looks however, as if the prophets who foretold of a revival in the pulp and paper industry during the remainder of the year are on the rigth side. In almost every section there are signs of not only larger business but of an upward turn in prices. In some directions the cost of raw materials has advanced, and it is quite likely that on this account we may witness stiffer values. It is significant that one mill. making book and other papers, has intimated that prices are subject to change without notice. Jobbers have lately ordered on a more generous scale, with the result that the mills are well booked up.

The general trade position has considerably improved. The settlement of the coal troubles in Canada and the better situation in the States make for a brighter outlook. For a large amount of work of all descriptions is coming forward, and at the moment the supply of labour is not equal to the demand, certainly as far as the Province of Quebec is concerned.

The printing trade of Montreal, which has been in a very dull condition, is looking up, although there is still complaint of under cutting of prices.

The efforts of certain American Publishers to curtail the use of newsprint continue. The Canadian mills are naturally anxious to keep production somewhere near capacity, and it may be taken for granted that the price policy will be based on this principle. Although the lumber companies will mainly benefit from the decision of the Quebec Government to maintain the stumpage rates now in operation, pulp and paper companies will also share in the lower scale of rates. The Provincial Government has always recognised the importance of industries dependent upon the Province's forest resources, and the decision of the Government is an additional instance of the progressive policy which has characterised the Government for many years in connection with the forests. The decision means a considerable loss of revenue to the Government, but on the other hand, it is calculated to stimulate the lumber and pulp and paper industries.

It is understood that most of the newsprint mills have ample stock of coal, contracts having been let quite early in the year.

Business in writings, books, and bonds is fairly good; the mills report the receipt of very substantial orders. Boards also continue in strong demand — a pretty good indication of a free movement in general trade. Roofing felts are being well bought at the recent advance of $5 per ton. The rise was largely due to the stronger rag market, where white cuttings are very firm and in good request. Waste papers, too, command a ready sale.

The pulp market shows an all round improvement. The exports are increasing at a very satisfactory rate, and there are signs of higher values. The mills are working more nearly up to capacity — in some instances the output is up to capacity. The call for bleached sulphite is excellent; unbleached is also in better demand; and groundwood is moving at a greater rate, although the price could be better. The prospect are good — to quote the words of one of the best known men in the pulp business. "I look for a satisfactory trade in pulp and paper for the next two years."

Toronto Topics

Kraft mills are fairly busy, although jobbers report business rather quiet, with fairly large stocks on hand. A fair business is being done in the west and Ontario consumers are buying lightly. M. F. kraft is quoted at $8. and M. G. at $8.15 f.o.b. mill.

New prices for board went into effect this week in consequence of the ten per cent increase announced by the mills last week. The new price schedule includes the following quotations: chipped and straw board, $55.00. white vat lined, $71.50: filled wood board, $82.50: folding wood board, $93.50; white patent coated grey back, $110: white patent coated manila back, $121. The mills are in active operation and the improved condition of the paper box industry is responsible for a good demand for board.

The book paper market is inclined to strengthen somewhat. Very little is being imported owing to the high prices in the United States and it is believed that it will only be a matter of a short time when the Canadian market will eliminate the two cent drop that went into effect a week ago. Canadian mills are busy for the most part and mills manufacturing for the publishers are running to full capacity.

The demand for new cotton cuttings continues very strong and most lines of rag and paper stocks, and ropes and bagging are fairly active. There are no changes in prices this week.

NEW YORK MARKETS

According to reports from the Federal Trade Commission, and other sources, the statistical position of the pulp and paper industry is steadily improving. In fact, the whole situation is showing very satisfactory strength. When one considers the fact that "dog days" are only just past, and that the trade of Europe is only very slowly recuperating there is every reason for encouragement in the situation on this continent.

With the exception of one item of specialities in small volume, every branch of the paper trade shows that shipments exceeded production in July and stocks of pulp in all grades of wood pulp, except in bleached sulphite, were less at the end than at the beginning of the month.

It is significant of the better feeling and firmer tone of the market that prices on book papers have been withdrawn by some mills, and better prices are being heard of.

HOW POOR ARE WE?

With everybody going about in old clothes talking poverty, we seem nevertheless to have had some good times in the year just expired. The taxes indicate that in 1921 the people of the United States spent:

For candy and chewing gum	$ 750,000,000
For soda water and confections	834,000,000
For perfumery, jewelery, silk stockings and articles of personal adornment	959,000,000
For tobacco	1,151,000,000
For amusements	897,000,000
Total about	$4,591,000,000

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WOOD PULP

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Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

CANADA'S EXPORTS OF PULP AND PAPER

Canadian exports of pulp and paper in July showed a decline from the previous month's figures, the total value of the exports being $9,738,252 compared with $10,534,876 in June. Exports in July of this year, however, were greater than in July 1921 when the value was $8,666,556.

The figures for the months of July 1922 and 1921 were as follows:

	July, 1921		July, 1922	
Paper:	Cwts	Value	Cwts	Value
Newsprint	1,146,362	$5,539,623	1,540,081	$5,453,845
Book	1,242	14,986	6,177	42,789
Other paper and manufactures	....	241,546	....	541,841
Total		$5,796,155		$6,038,475
Pulp:				
Sulphate (Kraft)	108,960	$ 390,068	257,743	$ 778,948
Sulphite Bleached	105,29	515,280	266,238	1,012,774
" Unbleached	221,916	990,807	493,589	1,213,700
Mechanical	408,975	974,246	537,453	694,355
Total	845,150	$2,870,401	1,555,023	$3,699,777

It will be seen that the quantity of wood pulp exported in July 1922 was almost double of the quantity in July 1921, but owing to lower prices the value did not increase in proportion.

The principal countries of destination of these exports in July 1922 were:

	Paper	Pulp	Total
United States	$5,242,723	$2,794,497	$8,037,220
United Kingdom	193,502	460,914	654,416
All others	602,250	444,366	1,046,616
	$6,038,475	$3,699,777	$9,738,252

Exports of pulp wood in July were 90,965 cords valued at $946,946 compared with 75,897 cords in June valued at $815,155.

For the first four months of the current fiscal year there is a considerable increase in the value of pulp and paper exports over the corresponding period of 1921; the total value for 1922 being $35,286,317 compared with $30,331,249 in 1921.

Details are as follows:

	4 months 1921		4 months 1922	
Paper:	Cwts	Value	Cwts	Value
Newsprint	3,826,792	$19,759,090	6,015,369	$21,323,557
Book	10,663	138,237	7,988	55,457
Other Paper and manufactures	....	1,457,237	....	1,888,717
Total		$21,354,564		$23,267,731
Pulp:				
Sulphate (Kraft	511,937	$2,020,071	934,656	$2,855,463
Sulphite Bleached	353,100	1,880,467	1,004,293	3,694,854
" Unbleached	695,308	2,846,114	1,315,488	3,347,753
Mechanical	995,434	2,230,033	1,655,775	2,120,516
	2,555,779	$8,976,685	4,910,212	$12,018,586

Exports of pulp wood for these four months amounted to 291,640 cords valued at $2,978,732 compared with 284,401 cords valued at $3,704,327 for the corresponding four months of 1921.

C. H. Johnson, Ltd is now The Johnson Wire Works, Ltd, St Henry, Montreal.

The change of name means simply that they are now operating their factory under a Dominion charter, as an entirely Canadian concern. There has been absolutely no change in management, and the personnel of their staff remains as before.

With the Woodsmen

NEW BRUNSWICK'S FOREST FIRE LOSSES LOWEST ON RECORD

Statistics of the New Brunswick Forest Service covering the present fire season to the middle of August show that the damage has been extremely slight and the expenditure for forest fire protection comparatively low. Eighty fires have been reported, burning over a total of 5760 acres, 30% of which contained merchantable timber and 70% being previously burned land containing young growth of various ages. On Crown Timber Lands only 1920 acres were burned. This is 96% less than the area of Crown Lands burned in 1921, and 93% less than the average of Crown Lands burned the last four years. Sixty per cent. of the fires did not spread over five acres and only 9 fires spread over 100 acres. When one realizes that over 12 million acres of forest land exist in New Brunswick the damage of 5760 acres is indeed low and marks a new low record for this province at least. Only ten fires required expenditure of money by the government in extinguishing, the other 70 being put out either by the warden or other person discovering it, or by the county councillors with the voluntary aid of the community, everybody giving his services without pay.

It is rather difficult to decide just where most of the credit is due for this comparatively encouraging state of affairs in fire protection, for cooperation has come from almost every quarter, often from the most unexpected sources. Even the weather man has helped for a part of the time at least. Hazardous periods occured during the first week and the last ten days of May and first three days of June and again during the latter part of July, but the heavy rains falling between these dry periods was of unestimated value in preventing forest fires. The recent amendments to the fire law enacted last session were a considerable aid in extinguishing those eighty fires which started, especially those on granted land, where the county councillors who were appointed fire wardens under the new regulations so ably and promptly extinguished those fires which started on private land, relieving the government wardens of this responsibility and allowing them more time to look after fire prevention on Crown Lands. Westmorland County operating under a separate County Act reports no serious fires and the total loss in that County is less than ten acres burned over.

There is no doubt that the new enactment requiring the municipalities through their county councillors to extinguish fires without any remuneration whatever has had the effect of encouraging the prompt control of all fires starting and discouraging the starting of fires to secure pay. Again, the greater interest taken by the communities is reflected in the case of settlers' fires, where the settler wishing to burn and knowing it is against the law to burn without a permit respects the rights of his neighbor as much as he does the fire law, knowing that damage claims are often more costly than actual fines. Railroad fire prevention has again improved this year, reaching a new high record in preventive methods and control. Although thirty-six of the fires were chargeable to railways, the prompt action of the railroads in extinguishing these is a fair indication of the realization by the management of the responsibility of railroad fires and the necessity of efficient control. Railway patrolmen following trains in forested sections extinguished some 250 tie fires during the dry periods.

The public as a whole have shown greatly increased interest this year. The department has now reached that long-hoped-for period in fire protection when public organizations and individuals are asking for literature and lectures pertaining to forest fire prevention. The attitude of the press is highly commended for scarcely a week passes without able editorials on fire protection by the leading papers, while the bulletin service of the Canadian Forestry Association is eagerly copied by all the papers. And the editorials are in the right key, not demanding that the organizations do this and that, but getting down into the causes of forest fires and asking the thoughtless picnickers and fishermen to be careful of fire. There has indeed been a smaller percentage of fires chargeable to the thoughtless pleasure seeker than ever before. To keep the subject of forest fire prevention everlastingly before the public during twelve months a year is the policy of the forest fire department and it is hoped that each year will continue to reveal more efficient fire protection.

NOTABLE PROGRESS IN FORESTRY

Keene, N. H., August 30 — "The past two years have seen notable progress in public appreciation of the necessity for making the timberlands of the United States continuously productive", said R. S. Kellogg, Chairman of the National Forestry Program Committee, speaking today before the Annual Meeting of the Society for the Protection of New Hampshire Forests, "and tangible results are being steadily achieved upon the basis of federal leadership and co-operation with the States. Despite the very proper efforts at Washington to reduce expenses, Congress made a substantial appropriation last spring for the continuing of purchases of land for national forests in the east, because it was recognised that such purchases are not an item on the expense side of the national ledger, but are really and truly an investment in the future welfare and prosperity of the entire country. More than to any other one influence in credit due to the Society for the Protection of New Hampshire Forests and its untiring Forester, Philip W. Ayres, for keeping this viewpoint before the people until Congress could not escape its duty to make the purchase policy a fixed feature of the national budget. Purchases since the inauguration of this policy in 1911 have exceeded 440,000 acres in the White Mountains and 1,600,000 in the southern Appalachians and there are still large areas upon the watersheds of navigable streams which must be protected by the extension of this policy of conservation through wise use of our natural resources.

"The problem of our timber supply is a many-sided one", said Mr. Kellogg. "The magnitude of it is so great as to require the utmost practical efforts of the States and of the National Government for years to come, in order that our 400 million acres of potential forest land may permanently yield the quantity and variety of products required for a nation at present numbering 110 million souls, and which the children of today may see grow to 200 milion.

"There are four cardinal points in any adequate program of forest conservation. These are:

> *First:* Fire prevention, which is an absolutely essential requirement for the protection of the existing supply of mature timber and of the young growth which will furnish the timber of a few years hence. No other forestry measure, however desirable, can be carried out until protection from fire is assured.

Second: Forest planting upon a greatly enlarged scale is necessary, in order to restore millions of the acres of barren land to productivity.

Third: Forest research and investigation must be maintained and enlarged, so that we may determine the best methods of reproducing the most valuable species and the most economical means of utilizing all species.

Fourth: Purchases of forest land by the National Government by the States and Municipalities must be continued until our nucleus of national forests originally created by the withdrawal of public lands from entry or sale is brought up to a total of publicly owned forests, comprising not less than 35 or 40 per cent. of our total forest area. This is necessary not only for the protection of watersheds but also to furnish the backbone and reserve of the nation's timber supply, for only through publicly owned forests will it be possible to grow an adequate amount of the larger sizes and older timber which must always be an essential part of our supply.

"The states are responding splendidly to the demands of the situation. Much is yet to be done, but progress is being made. It is especially encouraging to note the recent designation of a special forestry sub-committee of the Committee on Agriculture of the House of Representatives, which is expected to study the testimony given at the Hearings during the past two years and to recommend national legislation that will enable the Department of Agriculture through the Forest Service to go steadily forward in its leadership in the solution of one of our most pressing internal problems."

PNEUMATIC MACHINERY BULLETIN

The B. F. Sturtevant Co. of Hyde Park Boston, Mass. has just issued a new 72 page Engineering Bulletin on Pneumatic Collecting & Conveying.

It contains 33 pages of pictures and diagrams, 17 pages of useful tables—how to find the size of fans, the suction, volume, R.P.M. and horsepower for any system, cubic feet of air handled per minute, size of pipe and ducts used, and various other valuable tables.

Data are also given on dust collecting from grinding and polishing machines, tumbing barrels, sand blast machines, coal breakers, shoe machinery and the removal of fumes, gases, etc. In addition, there is information on the conveying of pulverized coal, fibrous materials, coffee, ashes, wool, wood chips, etc. etc. It is a most comprehensive treatise on Pneumatic Collecting and Conveying System.

A copy will be sent on request.

Manganese and Steel Foundries Ltd. has taken over the buildings on Water Street, Sherbrooke, Que., known as the Sherbrooke Iron Works, and are now turning our Castings. Mr. P. McCullough, formerly of the Canadian Brakeshoe Company Limited is President and General Manager of the new Concern while Mr. A. S. Bayles, formerly of Canadian Ingersoll-Rand Company Limited, is Secretary-Treasurer.

The Lincoln Mills, Ltd., Merritton, Ontario, have put in force a cut in wages for their employees of 5 cents an hour affecting all classes of workers in the sulphite mill and paper mill. The agreement was reached by an arbitration board composed o fthe company's executives, members of the Union from Montreal and Toronto and representatives from each class of workmen from the mills, taking effect August 16th last.

NEW PROCESS FOR COOKING STRAW, ESPARTO, ETC.

We are in receipt of a pamphlet entitled "Fabrication des pâtes à papier" written by Mons. A. de Vains, Engineer, of Miribel, Ains, France, which describes a process for making paper pulp from esparto, straw, bamboo, etc. The process was devised by the author and consists in:

1. A moderate soda treatment to facilitate the separation of fibres by mechanical action.
2. Chlorination by a patented process using chlorine hydrate.
3. Solution of the chlorinated non-cellulose components by a patented chemical treatment.
4. Bleaching of the cellulose with a very small amount of bleaching powder.

Pulp prepared by this process is claimed by the author to have the following qualities:

Maximum of 2 p.c. of oxycellulose.
Extra white pulp.
Specially firm pulp.
95 p.c. by weight of the plant cellulose recovered.

The process is compared with the English soda process and it is claimed to have advantages in simplification of process and consumption of chemicals with this comparative table:

Plant	Ordinary Process Soda		Ordinary Process Chlorine	Vains' Process Soda		Vains' Process Chlorine	
	p.c. on Plant	p.c. on Bleached Pulp	p.c. Bleaching Powder	p.c. on Plant	p.c. on Bleached Pulp	p.c. as Cl_2 10 H_2O	p.c. as Bleaching Powder
Esparto, Spanish . .	16	32	4	8	16	7	4
Esparto, African . .	17	40	4	9	21	8	4
Wheat Straw . . .	18	42	4	9	21	8	4
Oat Straw	18	40	4	9	20	8	4

These results are based on a yield of bleached cellulose as follows: Spanish esparto 50 p.c.; African esparto 43 p.c.; Wheat straw 42 p.c.; oat straw 45 p.c.

This process dispenses with the soda recovery and causticizing departments, and chiefly on this account claims a saving of 263.58 francs (at present exchange about $24) per metric ton (2,205 lbs.) The cost, however, depends on power rates in France.

We cannot speak critically of this process from the pamphlet as there are two patented stages, the treatment with chlorine hydrate and the solution of the chlorinated non-cellulose matter.

We believe, however, that it might be of interest in the cooking of straw pulp. One of the sources of expense in straw pulp manufacture has been the loss of soda due to the formation of silicate. The elimination of the recovery process should, if economically practicable, do much towards solving that problem. There would be on the other hand in the western provinces, the difficulty of utilizing the excess chlorine which is produced, and the lack of cheap water power. It has been our experience that chlorine cannot be produced by steam generated power. In some districts, however, conditions may be such that "Vains'" process could be employed. Anything that will help to salvage the straw that is burned up so uselessly every year is worth consideration, and if any of our readers are interested they could write Mr. Vains for further particulars.—T. L. C.

The Interlake Tissue Mills Co. is distributing wall cabinets showing the convenience and other advantages of the interfolded paper towels which the company specializes in. It makes a very attractive advertisement.

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GARDENVALE, Que.

IN THE SUPREME COURT OF BRITISH COLUMBIA

Between

John Emerson and James Allen Ward Bell,

Executors of the Estate of James Sharpe Emerson, deceased, on behalf of the said Estate and all others, the holders of First Mortgage Debentures of the Defendant Company entitled to the benefit of Indenture of Trust mentioned in the Endorsement on the Writ in the action.

Plaintiffs

and

Prince Rupert Pulp and Paper Company, Limited, and The Montreal Trust Company

Defendants

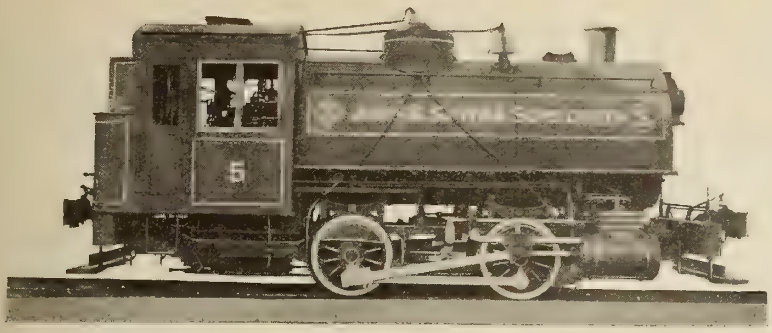
TAKE NOTICE that pursuant to the Order of Mr. Justice Morrison made on the 26th day of July, A. D. 1922, in a debenture holders' action commenced by John Emerson and J. A. W. Bell, executors of the estate of J. S. Emerson, deceased, on behalf of the said estate of J. S. Emerson and all others, the First Mortgage debenture holders of the above company, to enforce the trusts of a Deed of Trust and Mortgage dated the 15th day of January, A.D. 1921, securing the same, the hereditaments and premises, property and assets comprised in the said Deed of Trust will be offered for sale en bloc at public auction by the District Registrar of this Court at his office at the Court House, Vancouver, British Columbia, on Friday the 13th day of October, A. D. 1922, at twelve o'clock noon. The property to be sold comprises two hundred and ten (210) Provincial Timber Licences, being situate in the Prince Rupert District, and one Saw Mill situate at the City of Prince Rupert, British Columbia. A complete list of the said properties and particulars thereof and conditions of sale may be had upon application at the office of the Receiver, Glen C. Hyatt, 607 Pacific Building, Vancouver, British Columbia, or at the office of the undersigned.

DATED at Vancouver, British Columbia, this 9th day of August, A. D. 1922.

Farris, Farris, Emerson, Stultz & Sloan,

Solicitors for the above named Plaintiffs,

1404 Standard Bank Building, Vancouver, British Columbia.



The locomotive illustrated was recently built by us for John B. Smith & Sons, Limited, Toronto, Ont., dealers in lumber, lath, shingles, doors, sash, blinds, packing cases, etc., also store and office fittings, tanks, silos, and interior finish.

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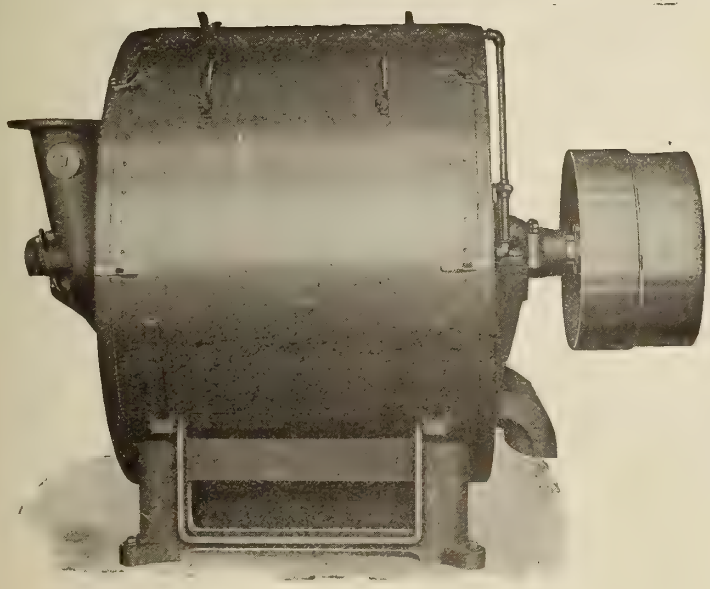

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Issued in 1917 and Maturing 1st December, 1922.

CONVERSION PROPOSALS

THE MINISTER OF FINANCE offers to holders of these bonds who desire to continue their investment in Dominion of Canada securities the privilege of exchanging the maturing bonds for new bonds bearing 5½ per cent interest, payable half yearly, of either of the following classes:—

(a) Five year bonds, dated 1st November, 1922, to mature 1st November, 1927.

(b) Ten year bonds, dated 1st November, 1922, to mature 1st November, 1932.

While the maturing bonds will carry interest to 1st December, 1922, the new bonds will commence to earn interest from 1st November, 1922, GIVING A BONUS OF A FULL MONTH'S INTEREST TO THOSE AVAILING THEMSELVES OF THE CONVERSION PRIVILEGE.

This offer is made to holders of the maturing bonds and is not open to other investors. The bonds to be issued under this proposal will be substantially of the same character as those which are maturing, except that the exemption from taxation does not apply to the new issue.

Holders of the maturing bonds who wish to avail themselves of this conversion privilege should take their bonds AS EARLY AS POSSIBLE, BUT NOT LATER THAN SEPTEMBER 30th, to a Branch of any Chartered Bank in Canada and receive in exchange an official receipt for the bonds surrendered, containing an undertaking to deliver the corresponding bonds of the new issue.

Holders of maturing fully registered bonds, interest payable by cheque from Ottawa, will receive their December 1 interest cheque as usual. Holders of coupon bonds will detach and retain the last unmatured coupon before surrendering the bond itself for conversion purposes.

The surrendered bonds will be forwarded by banks to the Minister of Finance at Ottawa, where they will be exchanged for bonds of the new issue, in fully registered, or coupon registered or coupon bearer form carrying interest payable 1st May and 1st November of each year of the duration of the loan, the first interest payment accruing and payable 1st May, 1923. Bonds of the new issue will be sent to the banks for delivery immediately after the receipt of the surrendered bonds.

The bonds of the maturing issue which are not converted under this proposal will be paid off in cash on the 1st December, 1922.

W. S. FIELDING,
Minister of Finance.

Dated at Ottawa, 8th August, 1922.

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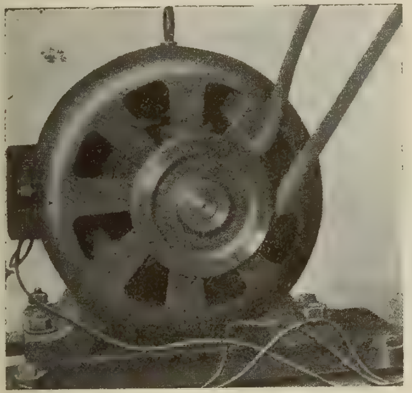

5-H.P. "Whittle" Belt Drive in operation. Note extraordinary curve caused by gripping power of Belt.
Motor pulley, 6 inches diameter.
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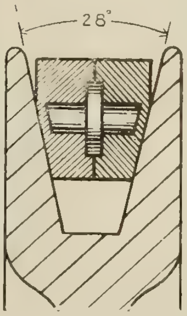
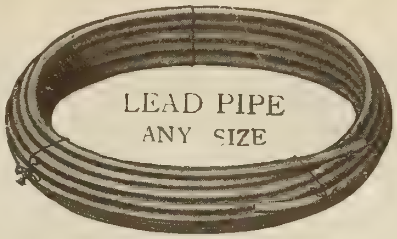
Belt, ¾ inch wide.



Showing Belt in groove of pulley



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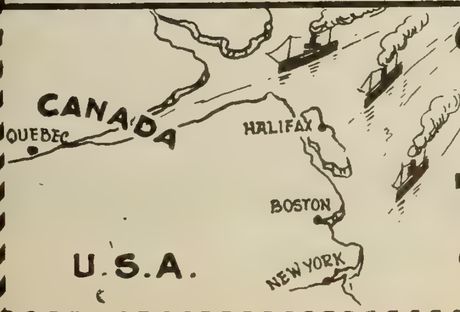

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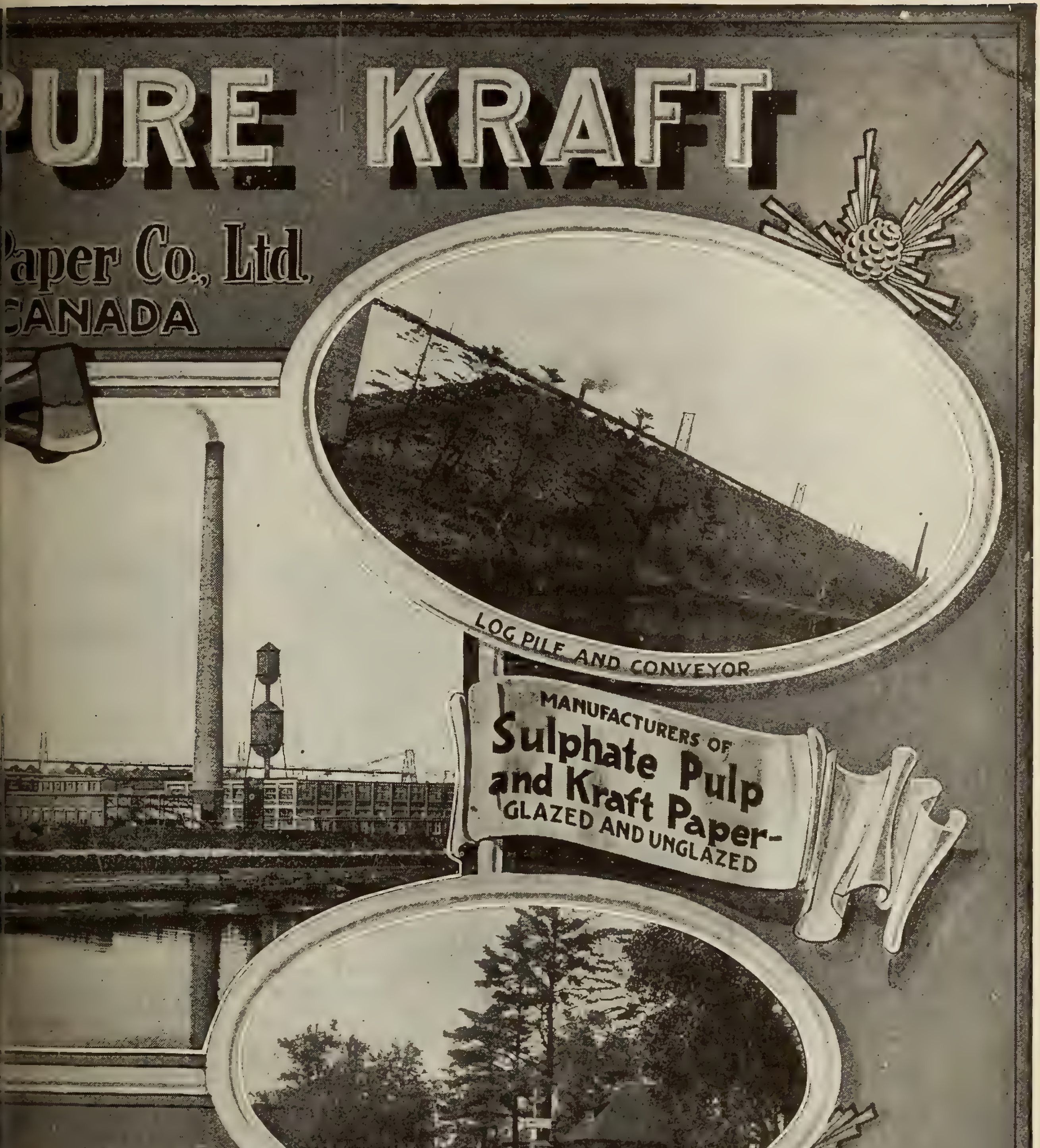

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Buyers who are unable to find in the classification here given such machinery or supplies as they desire are invited to write Service Dept., Pulp and Paper Magazine, Gardenvale, Que., who can, in all probability, refer them to proper sources.

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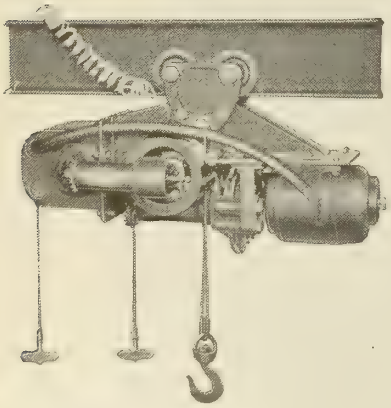

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- Diamond State Fibre Co., of Can., Ltd
- Can. Nashua Paper Co., Ltd.
- Can. Vegetable Parchment Co., Ltd.
- Garden City Paper Mills Co., Ltd.
- Price Bros & Co., Ltd.
- Smith Howard Paper Mills.
- Victoria Paper & Twine Co., Ltd.

Soda Pulp:
- M. Gottesman & Co., Inc.

Sulphate Pulp (Kraft):
- American Woodpulp Corp.
- Bathurst Lumber Co., Ltd.
- Brompton Pulp & Paper Co., Ltd.
- M. Gottesman & Co., Inc.
- Dryden Pulp & Paper Co., Ltd.
- Lagerloef Trading Co., Inc.
- Wayagamack Pulp & Paper Co., Ltd

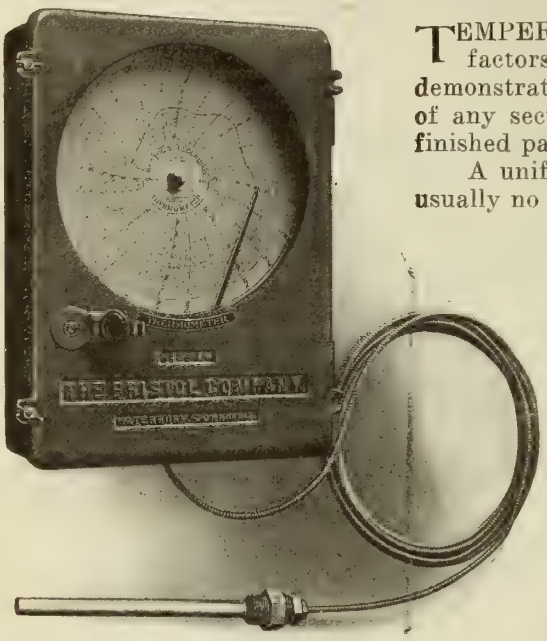
Sulphite Pulp :
- Abitibi Power & Paper Co., Ltd.
- Acer, J. H. A. & Co., Ltd.
- American Woodpulp Corp.
- Donnacona Paper Co.
- M. Gottesman & Co., Inc.
- Lagerloef Trading Co., Inc.
- Laurentide Co., Ltd.
- Mattagami Pulp & Paper Co., Ltd.
- Price Bros. & Co., Ltd.
- Riordon Sales Co., Ltd.
- Spanish River Pulp & Paper Mills. Ltd.
- St Maurice Paper Co.
- Smith Howard Paper Mills.

Tissue and Toilet:
- Beveridge Supply Co., Ltd.
- Can. Vegetable Parchment Co., Ltd.
- E. B. Eddy Co., Ltd.
- Garden City Paper Mills Co., Ltd.
- Interlake Tissue Mills Co., Ltd.
- Victoria Paper & Twine Co., Ltd.

Wrapping:
- Beveridge Supply Co., Ltd.
- Brompton Pulp & Paper Co., Ltd.
- Can. Vegetable Parchment Co., Ltd.
- Dryden Pulp & Paper Co., Ltd.
- E. B. Eddy Co., Ltd.,
- Garden City Paper Mills Co., Ltd.
- Interlake Tissue Mills Co., Ltd.
- Spanish River Pulp & Paper Mills.
- Victoria Paper & Twine Co., Ltd.
- Wayagamack Pulp & Paper Co., Ltd

THE QUALITY OF YOUR PRODUCT

Depends Upon the Uniformity of the Temperature in the Machine Room



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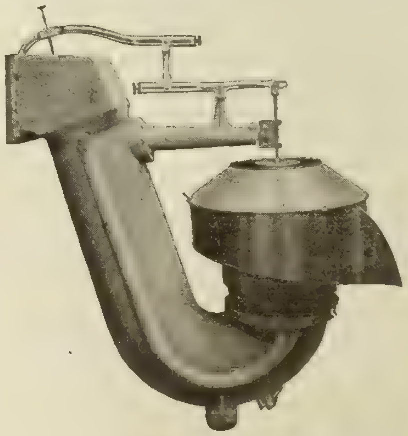

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The Barrett Co., Ltd.
Beveridge Supply Co., Ltd.

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E. B. Eddy Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Packing:
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Elixman Paper Core Co.

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Bertrams, Ltd.
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Emerson Mfg. Co.
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Norwood Engineering Co.
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McAvity & Sons, Ltd., T.
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Westbye, P. P.
Wolf, R. B. Co.

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Horton Steel Works, Ltd.
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MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:
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White, W. H.

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Waterous Engine Works, Co., Ltd.

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Imperial Trading Co.
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Smallwood Stone Co.
Smallwood-Low Stone Co.

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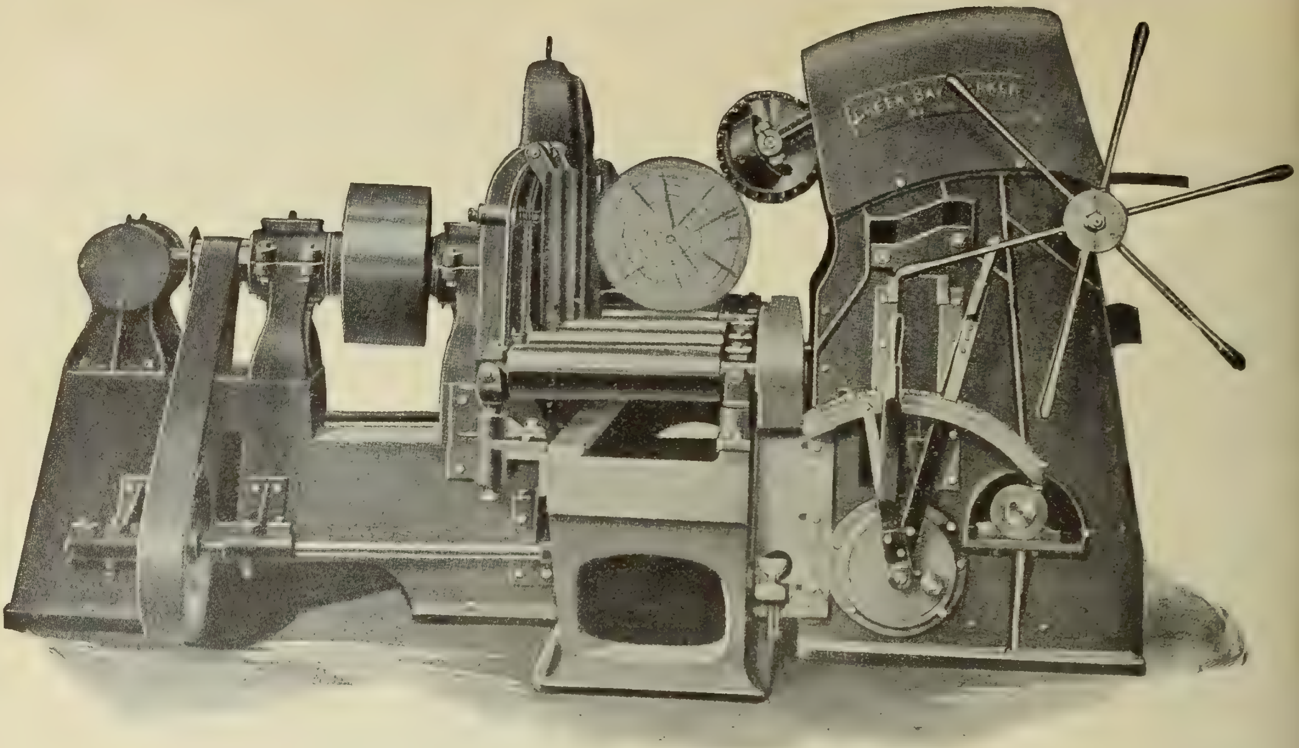

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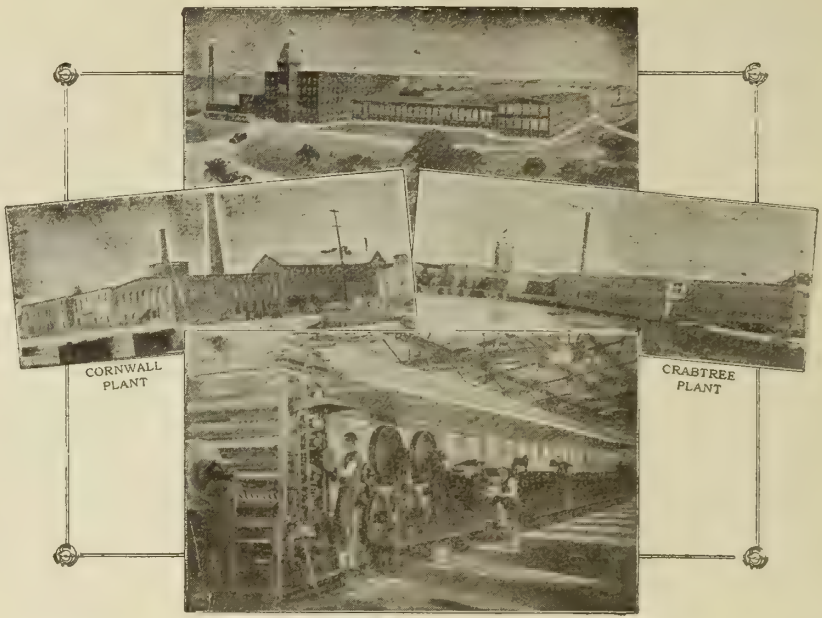

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XX. GARDENVALE, P. Q., September 14th, 1922. No. 37.

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J. NEWELL STEPHENSON, M. S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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-:- EDITORAL -:-

RECOGNITION OF SERVICE

On another page of this issue an announcement is made of the award of the Barnjum prizes for the best suggestion on the control of insect enemies of the forest, the fight being chiefly directed against the spruce bud-worm. Mr. O. Schierbeck is to be congratulated on winning the prize and we hope to have his essay for publication in the near future. That well over two hundred suggestions were received shows the wide-spread interest in the problem of insect control and the general appreciation of the seriousness of this menace to one incomparable forests.

Government entomologists have realized the importance of this problem, and have been quietly and conscientiously working on it for years, even when they had little encouragement, not much cooperation, and little incentive beyond the satisfaction of knowledge gained and avenues opened for an attack on a common foe—for the enemy of the forest is the enemy of the country. The award of $1,000 each to Messrs. Swaine, Craighead and Tothill, will, we venture to assert, do more to arouse the public to the nature of the work of our unassuming, underpaid research men—and women—in government and college employ than even the princely prize of $5,000 so well deserved by Mr. Schierbeck.

Canada is in Mr. Barnjum's debt, not for the money he has spent, because that has brought him pleasure, but because he had the sense and foresight to see and size up the problem and the ability to arouse enthusiasm in the search for a remedy. The generous prizes are not merely an award for winning a good contest, but are also and even more, a very happy expression of appreciation for conscientious endeavor to promote the welfare of the public.

UNEMPLOYMENT THIS WINTER

At the conference on unemployment at Ottawa, last week, between representatives of the Federal and the various Provincial Governments, more or less optimistic reports were heard from nearly all parts of the Dominion. Indeed, so far as the present time is concerned, in most, if not all, of the Provinces, the situation as regards unemployment is just about normal for this season of the year. It seems pretty clear that in British Columbia, Manitoba, Alberta, Saskatchewan, New Brunswick and Nova Scotia, a job is, or can be, provided for practically every physically fit man who wants one. In Ontario, the employment in factories is about normal, which state of affairs represents between three and four per cent. of unemployment. In Quebec, there is very little unemployment except in Montreal and Quebec City and in both of these cities the number of applicants for work at employment offices is decreasing.

Thus, just now, there is comparatively little unemployment in the Dominion. But this condition is not likely to last for long. In less then two months harvesting operations will be all over. The harvesters, or the majority of them, will have returned from the fields to the cities and towns whence the lure of work at good wages has temporarily drawn them. And, though their wages have been good, how long will what they have been able to put by last such of them — one prays that these may be few — as will be constrained to endure a winter, or a large part of a winter, of enforced idleness? There are many other seasonal and partly seasonal industries in which a slackening of work will contribute to the volume of unemployment shortly after the time of the cessation of harvesting operations. In some of the building trades work practically ceases in winter. The fishing industry is now relatively prosperous, but the winter spells hard times for those who make their living at this calling. In Montreal, the closing of navigation invariably means a substantial increase in unemployment. Nor, at this moment, can we be altogether unmindful of the menace to the factories in our large cities and towns that must be involved if the present *impasse* in the coal situation in the United States continues. There are people of whom it can be said that "If their own front door is shut, they'll swear the whole world's warm" — authorities and individuals in authority who will always deny that unemployment is likely to be serious until it is actually upon us in almost unmanageable proportions. We trust that the Ottawa conferees will turn a deaf ear to counsels emanating from such sources as these. For our part, while we certainly see reason to believe that unemployment, this winter, will not present either so great or so grave a problem as it did last winter and the winter before, we are yet convinced, for reasons some of which we have just indicated, that it is not going to prove of the almost negligible dimensions that are being anticipated in some quarters. Accordingly, we trust that such plans as may be formulated for dealing with the coming winter's unemployment will be as elastic as possible — that they will be adaptable not merely to a normal, but also to an abnormal, unemployment situation, should such an emergency arise.

In our view, the Government has done wisely in calling for co-operation between the Federal and Provincial Governments. One rigid, hard-and-fast scheme for dealing with unemployment for the Dominion as a whole would be certain to be needlessly expensive and also largely to fail of its purpose. Conditions differ in the different Provinces and no narrowly uniform plan for handling the unemployment difficulty in all the Provinces is feasible.

It is not difficult for us to acquiesce with the utmost cordiality in the view of the Ottawa conferees that the "doles system" is wrong in principle and harmful in practice. Indeed, we go further and say unhesitatingly that the engaging in public works of little, if any, productive utility (however unavoidable it may be in given circumstances) is always fraught with a certain element of danger, nationally and individually. The amount of employment for unskilled workers is largely determined by the activity of skilled workers. In times of depression, to plan "work that anyone can do" is to plan a mere palliative — it is self-contained and has no remedial power. Except insofar as it removes, for the moment, the menace of acute hardship, if not starvation, relief work, as a remedy for unemployment, is futile.

We are conscious that, in what we have just said, we are opening up a question of considerable magnitude. And it is this: After all, why should there be unemployment in this country? Canada is not over populated. On the contrary, she needs hundreds of thousands — if not millions — of settlers from other lands to help increase production and thus to help meet the vast debts she has incurred in the creation of extensive and expensive transportation systems and in the prosecution of the war. But the trouble with our immigration heretofore has been that, very largely, it has either been allowed to take care of itself, or it has been improperly directed. It is this above all that has led to the unemployment and want which, on the scale on which we periodically have experience of them, are a gross and glaring anomaly in a young and vigorous and virile country like our own. For the problem of unemployment is interwoven with that of immigration — there can be no mistake about that. The one will never be satisfactorily solved apart from the other. Let there be no mistake about that, either. In the course of the conference at Ottawa, we trust that this fact, above all others, has been borne in upon the minds of the conferees — we are very sure that, if they have eyes to see and ears to hear, it must have been — that in the successful handling of the immigration problem lies the future cure — the only sure and certain cure — of the unemployment evil in Canada. To relieve unemployment in the coming winter, emergency measures may be necessary. But if the Ottawa conferees become seised of the importance of the cardinal fact we have just emphasized, and steadfastly resolve that, for the future, the immigration policy of the country shall be properly directed and regulated, then the conference will bear good,— indeed, invaluable — fruit. From Journal of Commerce.

NO MAN EVER YET KNEW HIS JOB

He may know a lot about it. He may know more about it than anyone else in the world.— Yet he does not know it all.

The reason is that every day, somebody, somewhere, finds some method or new material in connection with some particular operation. Conditions are constantly changing, so while a man may have a hundred per cent knowledge of his job today, he may only have ninety-nine per cent of it tomorrow because of something new that has developed over night.

The changes are small day by day, but they are big in the aggregate. Look at pulp mill operation a few years ago, and compare it with operation today.

The change in industry is like the growth of a child. You may not notice the growth from one day to another, but if you do not see the child for six months the change seems marvellous.

There is nothing particularly instructive about such a statement unless the influence of these changing conditions is thoroughly understood. The constant change in machinery, in material, in methods of operation, makes it absolutely imperative for a man who wishes to be master of his job, to be on the job all the time. He can't simply learn his job once, and then sit back and do it in a mechanical way. If he is going to be a success he must keep pounding away, learning continually, studying the new things in the industry, keeping abreast of the times.

No employee of a mill, superintendent, or latest joined hand, can afford to overlook this big fact. Everything alive must grow.

When your asters, your petunias, your peonies, at the front door, stop growing, what happens? They begin to die.

When your potatoes and beets and carrots in the garden behind the house stop growing, what happens? They begin to die.

With man it is the same. When the cells stop growing, he begins to die.

It is the same with a man's daily work. No matter how good a man is, how capable, — if he is not growing, that is, learning something new, he begins to die as far as a capable workman is concerned.

There is no life without growth.

A man paddling up a swift current can't stop paddling without sliding back to the bottom of the rapids. A man must either keep on getting better on the job, or becoming worse. It is impossible to stand still. The fellow who attempts to stand still, soon reaches the bottom of the rapids.—The Broke Hustler.

Editor's Note: Write to the Pulp and Paper Magazine for information on Textbooks and Correspondence Courses.

The ladder of Life is full of splinters but we never realize it until we begin to slide down—Ex.

Keep Climbing.

LOCKWOOD'S DIRECTORY

Records show that more changes have taken place in the industry covered by LOCKWOOD'S DIRECTORY during the past year than in any previous year. These changes have all been carefully investigated and are shown in the new edition which will make it invaluable to its users.

The publishers have already in hand over one thousand orders, and would therefore suggest that you send in your order by return mail so that they will be able to fill it from among the first copies received from the printers.

Where Are We Heading?

An Open Letter to Canadian Citizens

The most serious condition of all to consider in connection with our present alarming forest situation is the fact that we should already cease cutting trees. Our country is denuded of forest growth to such an appalling extent that our wells and springs are drying up, also our brooks and streams which are now raging torrents in the spring and very low in summer, shutting our industries down for want of power in summer and putting them out of business in the spring from too much water.

Before the settlement of the country, there was very little surface run off, the water from rain and snow entering the duff and soil, allowing its slow seepage into the springs and rivers, the sub-soil being thereby kept saturated with water; or, in other words, the forest acted as a sponge, and after its removal with nothing to retard the onward rush of the water we have violent freshets followed immediately by low water conditions and drought.

On this continent conditions have now reached a point where prompt and energetic action has become imperative. The water level in the soil has fallen and is continuing to fall at the average rate of more than 3 feet every ten years ever since the denuding of our forest growth which began more than a hundred years ago. This is a fact of which very few are aware, and its seriousness, when it becomes fully known and appreciated, will cause a forest panic such as they had in Europe in 1800. This rapid lowering of the water-table has more to do with the tremdous losses recently suffered in our forests through insects and disease than anything else. The drying up of the soil and consequent lack of water leaves our forest growth in such a weakened condition that the trees succumb to the attack of the first insect pest that comes along, regardless as to whether it is the spruce bud worm, bark bettle or borer.

Our Government should immediately withdraw all forested land from settlement. We have already too much land that has been cleared, a great deal of which has been abandoned and a much larger portion of which is about one-tenth cultivated. If all our cleared and agricultural land was being farmed as it should be we would not need to clear any more land in Canada. There is no more profitable crop that the farmer can raise for the future than his timber crop. The present apparent surplus of pulpwood was brought about by an over-production of cut wood, caused by two reasons, one, the very prices which were offered a year or so ago, amounting to from $40. to $50. per cord delivered and from the fact that there was quite a large cut made in the endeavour to salvage some of this bud worm killed timber. Due to these high prices quite a few farmers have cut the last stick of wood they had on their farms. This wood has gone forever, and no matter how high the price may become in the future, these farmers will derive no benefit therefrom. The pulp and lumber mills are finding out that a large amount of the dead timber which they are trying to salvage has practically no value, as it was too far gone to be of any use, and those who have not found this out will eventually do so after they have lost a great deal of money in trying to salvage something that is beyond saving.

The mills in the Province of Quebec, through the enactment of wise regulations by that Province, are finding out that the amount they can cut on many of their areas has been reduced 50 per cent. This will mean that these mills will be forced to go into the market and buy farmers' wood. Not eventually, but now, or just as soon as their present wood pile is exhausted—which will be within the present year, prices having already advanced not only for pulpwood but for lumber as well. The settler who has already taken up land which contains wood, if he has any judgement at all, will only make a very small cut per year, as it is simply a waste to cut down more than he can clear and cultivate in one season. He will also thereby derive benefit from the advance in price of wood that will be very rapid from now on.

Our Governments, instead of spending so much of their time trying to find ways and means of simply holding on to office, should really take hold and do something that would benefit the country, such as:

The prohibiting, first of all, of the export of all unmanufactured wood and the establishment of a sane forest policy. A forest policy without an embargo is like putting in the bung and leaving the faucet open.

A business management of our national railways, including the development of water powers and the electrification of, at least, the portion through our forests and where coal costs are the highest.

Development of our coal mines.

Establishment of a sane immigration policy, with wise restrictions, encouraging the occupancy of our abandoned farms and prairies rather than the clearing up of more land, as we have already too much cleared land in Canada, having a surplus of prairie and open country, without creating more. In fact, Canada is, between the ravages of fire, wind, bugs and the axe, rapidly becoming a desert wilderness, with not a hand or word of the Government lifted to stay the same. The mere pittance appropiated for our Forest Insect Branch is a disgrace to any civilized nation Even the Chinese are doing far more than this. And the amount expended on our Forestry Branch is only a trifle over one half cent per acre per year.

With the above reforms accomplished, there would be no need of the Government making any effort towards holding on to office as they would be given an overwhelming majority at the first opportunity, while any do-nothing Government is simply drifting toward sure oblivion. In addition, we should then have no unemployment problem or discontent in Canada, but would rapidly become the happiest and most prosperous nation in the world.

With regard to an embargo on unmanufactured wood, it has been suggested by some that the United States might thereby be justified in retaining all their coal within the bounds of their own country. Speaking personally, I would like to see them do this tomorrow. We have ample coal for our own needs, which only requires development and an adjustment of our present freight rates. We are at the present time sending out train after train of empty cars westbound which had far better be loaded with coal, even at a very nominal freight. In addition to this we have millions of horsepower going to waste in our rivers which should be immediately developed and a large part of our railway system electrified. The only argument used against this is that we cannot afford to do this at the present time. My answer to this is, that we cannot afford not to do this. It can never be done as cheaply as it can to-day with the low price of copper and other materials.

In addition to our coal and water power going to waste, we have 150 million cords of wood in the Province of Quebec that are dead and a larger part of which is of no other use than for fuel, and in every wood's operation all over Canada, there are sufficient tops of trees and waste wood left in the woods to supply all local needs in each section of the country, at least while it lasts.

Personally, I have not used a pound of coal for forty years, and I shall not not do so just so long as I can obtain a supply of this waste wood from the forest. My house is heated with a wood furnace, a wood range in the kitchen, and wood fires in the open fire places, with no coal gas, no dust, no cinders, no ashes to sift, and the pleasentest and most cheerful heat in the world; and what few ashes are made from a wood fire are valuable as a fertilizer, so that there is absolutely no waste whatever.

Electrify the Railways

In connection with the burning of coal on our railroads, there is nothing more inefficient than a coal burning locomotive. There is another very important phase in this connection, and that is, the tremendous loss suffered in our forests through fires caused by coal burning engines. In one of my first bulletins on Forestry, I made the statement that along every railroad that was built into a wooded country, more wood was burnt up than was ever hauled out. At the time I made this statement it was considered overdrawn by some people, while, as a matter of fact along the Transcontinental from La Tuque to Cochrane, a distance of only 500 miles, twenty million cords of wood have been burnt up while less than one million cords have been hauled out, or more than 20 cords burnt for every one shipped. The amount of money lost by Canada just along these 500 miles of Government-owned Railway amounts to more than sufficient to have electrified all the Government Railways in Canada. Consequently, from this standpoint alone, if from no other, I say that Canada cannot afford not to electrify her railways. There is another very important reason which is emphasized by the present strikes in the coal mines. This is another answer to the suggestion made by some few, that if we put an embargo on wood the United States might put an embargo on coal. Now, outside of any action that the United States might take in this connection (which I have stated before is unthinkable from purely selfish reasons) we still have this menace hanging over our heads, from the fact that a strike in their mines or on their railroads is a continual menace to this country and makes it imperative for the Government to develop our mines and water powers so that we may be independent of all outside interference with our business.

Another reason for electrifying our railroads is the greater efficiency obtained, as each train has the power of the entire power station behind it rather than the inefficiency of the power contained in a single coal burning engine. This is particularly the case in the winter time when our roads are more or less blocked with snow and engines frequently become stalled and run out of coal. To say nothing of the comfort and luxury of riding in a train without smoke or cinders both for the passengers riding on the train as well as the towns and cities through which the trains pass. In addition to all of this is the enormous amount of money that would be saved in our railway coal bill which would rapidly reduce our heavy railway deficit. Added to this, we have immense peat bogs that are now lying idle waiting for development. It seems as if everything in this country is waiting; waiting for some strong forceful Government to take hold and develop our country as it should be and make of Canada the most prosperous country in the world.

Another reason why the United States would not be justified in not shipping us coal, simply because we have no more wood to ship, is the fact that coal is manufactured just as far as it is possible to be when shipped to this country, while raw wood can be increased in value by manufacture from a price of $10.00 per cord up to a value of $50. or $75. per cord, according to class of paper into which it is manufactured.

Again, the United States, outside of the present moment, when they have a strike on their hands, is only too glad of our market for their coal. The very cause of their present strike is based on the fact that the miners have not sufficient employment and want more days' work per year, which their present market does not provide for; and until we develop our own country as it should be, we shall always have the menace of a strike in their coal mines or on their railroads staring us in the face. So that the wise thing for our Government to do to-day would be to take advantage of the present occasion to immediately provide ways and means to wipe out these menaces.

I have never yet written an opinion or made a prediction with regard to our forest situation in the past thirty years that has proved correct. It has always gone beyond anything I have ever predicted, though at the time I made these statements, practically everyone said I was over-pessimistic and that scientific forestry would provide for all our needs. This would undoubtedly be the case if we had started this work a hundred years ago as it was in Europe. As it takes from fifty to one hundred and fifty years to raise a tree, I cannot see what we are going to do for a supply between the time of the exhaustion of our small remaining supply and the maturing of the seedlings that we are about to plant. Practically all of our present cutover lands are bound to burn over. It is the only way this slash will be gotten rid of, and with the present enormous amount of dead trees caused by the bud worm invasion, our fire hazard in the forest is increased a thousandfold.

When I first began publishing bulletins on our forest situation, less than three years ago, no one would credit the statements I made with regard to the loss suffered from the spruce bud worm and other insects, and by the time they were ready to acknowledge that there was some damage, it was too late to salvage the large part of this bud-worm killed timber. Each time I published the amount of loss in the different provinces, my figures have been disputed, while within a year they would be accepted, and my own figures further increased, and again rejected, and a year later accepted.

When I first suggested that the State of Maine had lost 30 per cent of her pulpwood stand I was laughed at. This figure was later on accepted, and on further examination when I raised the estimate to 40 per cent, the same thing occurred. The same thing happened when I set the loss ot 50 per cent, while to-day this figure is accepted by the best authorities in the State of Maine.

The same figures and conditions apply to the Province of New Brunswick. My last figures on New Brunswick were about 50 per cent loss while to-day, after compiling my latest return, the loss averages in the entire Province 60 per cent. Practically the same thing has occurred in the Province of Quebec, and the figure which is now accepted and acknowledged by the best authorities is that we have suffered a loss in that Province of one hundred and fifty million cords.

I have spent a large part of my time for the last thirty years in trying to convince the people that our forest resources were being very rapidly depleted and that consequently no commodity in the world would have the rise in value that would obtain in timberlands, while nearly everyone else has been arguing against this proposition, claiming that we had enormous forest areas, that wood was growing as fast as it was being cut and that we could raise all and more trees than we should ever require through scientific forest methods. During all of this period I have been backing up my judgment with my money, in buying up lands just as fast as I could find funds to put into them with the result that I as well as the friends who have taken my advice have accumulated a fortune through the enormous increase in timberland values while the people who have argued on the other side are right where they were when I began.

We have been using in Quebec about three million cords annually in our Pulp and Paper mills, and last year exported more than a million and a half cords, or enough to half supply our own mills. It has been said that we have a very large forest area in Canada that is capable of producing, under proper management much more than our present cut; but this, as I said before, cannot be in our day nor before the time of our grand-children, and what interests me particularly is to-day, when my well is dry, my mill shut down for want of water in the river, the brooks where I once caught two pound trout dried up, and when the next day after a heavy rain, we have to go out and fight forest fires because the ground was so dry and the water-table lowered in the earth to such an extent that the rain, as it fell, ran off or was immediately dried up in the soil.

That public opinion is overwhelmingly in favor of restricting the shipment of unmanufactured wood out of the country is strongly emphasized by the fact that out of 225 forest essays, 90 per cent declared in favor of it, 9 per cent omitted to express an opinion, and I only opposed an embargo or heavy export tax.

For the future there will not only be a demand for every cord of wood available in Canada but our own mills in the very near future will be right up against it for a supply of raw material, so even from a purely selfish standpoint the farmer or settler should cut as few trees as possible for on account of the limited supply remaining there will be a tremendous increase in price in timberland and all kinds of wood products from this time forward, as prices are governed by the law of supply and demand, and in the case of trees the supply is decreasing at an alarming rate and the demand is continually increasing. The consumption of wood by our Canadian pulp and paper mills alone, has doubled in the past five years. Consequently for the future the farmer and settler will be in a position to make the price at which he will sell his wood, instead of the pulp mills making the price they will pay.

In addition to all this the farmer or settler in furnishing wood to our Canadian industries is building up a home market for the product of his farm which is more important than ever, now that the U. S. is putting an embargo in force in the form of a high tariff against Canadian farm products.

The only fairly safe supply we have left is the farmer's or settler's wood lot, while it lasts, as these lots are more or less segregated and are easier of protection from fire and if they are burned or blown down can be salvaged, and this is the wood that is being shipped to the U. S. to feed mills that are competing with our own pulp, paper and lumber industries.

I cannot close without paying high tribute to the small but loyal band of patriotic citizens who have given unstintingly of their time, thought and brains for Canada's good, in the important work of Forest Conservation. And in this connection I can think offhand of such honored names as Beck, Black, Caldwell, Campbell, Craighead, Dwight, Gibson, Gouin, Hibberson, Howe, Little, Mercier, Piché, Prince, Sorgius, Stephenson, Swaine, Tashereau, Tohill, Wilson; and last, but least, the loyal editors of Canada's splendid newspapers.

Frank J. D. Barnjum.

Montreal, September 1st., 1922.

EXTRAVAGANT ECONOMY

There are a lot of people that have lately taken to chattering about economy, the same people that a year or so ago were scattering largesse, and expecting more of the same. If it were real economy they were talking about now, we would say "Attaboy! Go to it!"

But a lot of it is only sham stuff. Real economy is always in season; it means household management. It does *not* mean niggardliness. The way some people shave here and pare there and lop off the other place, "saving" quite without regard to real vital and permanent needs—it all reminds us of the little boy laboriously climbing the stairs.

> "What for you go these stairs up two steps at a time for Ikey?
> "So I not wear mine shoes oudt, Grandfather."
> "Take gare you don'd sblidt your bants."

To let your stocks run out before replenishing, to let your services slacken down, to get into a dilatory or half-speed way of doing things, may save shoeleather, but—

When Samson dilly-dallied it didn't occur to his mind that he was getting out of training, and that his competitors knew it. So when the chance to do something big came along—the chance he had dreamed of when he could make another big killing,—he remarked that he would go out as before, and shake himself. But he had lost his snap; he was soft; and he was knocked out in the first round.

When business revives, as it will soon, the prizes are going to the men who have kept up their condition by persistent hard fighting for orders, by keeping up their stocks so as to serve promptly all reasonable demands; not to the merchants who tell their customers "I'm sorry, but we haven't that; the price was so high we were afraid to stock it." "Afraid to stock it." But not afraid to lose the sale—and the customer—Extravagant economy, we'd call it, too expensive for our blood.—The Caravel.

Invalids often think they need more rest, when all they need is less medicine.

PAPER AND PULP STAND THIRD IN CANADIAN TRADE

The importance of the pulp and paper industry, and particularly the pulp and paper export trade is shown by the fact that for the year ended April, 1922, these exports had a total value of over $180,000,000— a figure exceeded only by exports of wheat and agricultural products.

According to Government figures for 1920, the Canadian pulp and paper industry employed an invested capital of over $347,000,000, of which slightly more than one-half was in the Province of Quebec. Production capacity was over 1,200,000 tons per annum. In the first six months of 1922, Canadian mills produced over 516,000 tons of newsprint, as compared with 612,000 produced by United States mills. Although 1921 and 1922 have been years of universal industrial depression, the Canadian newsprint output during the first six months of 1922 was 93.6 per cent of mill capacity.

The price of $70 per ton, and in some cases $75 per ton, which is at present being obtained by practically all Canadian manufacturers of newsprint, is sufficient to afford a reasonable profit, says W. C. Pitfield, vice-president and general manager of the Royal Securities Corporation, writing in the *Spur* for August.

While the volume of United States production has remained practically stationary at around 1,300,000 tons since 1913, Canadian production has increased from 350,000 tons to 812,000 in the same time. Exports to the United States have increased from 219,602 tons to 791,978. In 1920 only 5 per cent of newsprint imports into the United States came from other than Canadian sources.

Not only does the United States depend upon Canada for 95 per cent of her importations of newsprint paper but she also leans heavily on the Dominion for importations of pulp. In 1912 there was imported from Canada only $5,000,000 worth of chemical and mechanical wood pulp. In 1921 these importations reached $71,000,000.

An authority says that paper imported from Europe has not been equal to United States or Canadian paper in quality—that its winding and moisture make it difficult to run on high-speed American presses—and that the damage in transit has been high.

GREETING CARDS

Christmas Cards, bearing just as good wishes as any gift could bear, are rapidly displacing costlier and more cumbersome expressions of good will says The Caravel. A few years ago the commercialization of Christmas had proceeded so far that one acute writer defined Christmas as "the time when we give what we can't afford, and get what we don't want." There arose the Society for Prevention of Useless Giving. The Spugs, as they were called, were the natural answer to such feverish buying and giving of expensive trash. They made it a point to give only useful presents, burdensome neither to giver nor receiver. And where a card would answer, a card was used.

Probably no important trade has done less advertising than the Christmas card markers. But they have been improving their quality year by year, tending less to ribbons and fancy gewgaws, and more and more to dignified grace and beauty.

The improved quality broadened the market, and today the vogue of the engraved greeting card has become well-nigh universal.

Greeting cards have become so satisfactory that there is now a regular demand for them throughout the year, especially for:

1st January, New Year's Day
14th February, St. Valentine's Day
17th March, St. Patrick's Day Birthdays
March-April, Easter Sept.-Oct., Jewish New Year
25th December, Christmas Wedding Anniversaries

DEATH OF ELMER POPE

Mr. C. Elmer Pope, a prominent figure in the paper manufacturing industry because of his work in the development of the art, died on August 29th at Millinocket, Maine. From early manhood he had been indentified with the industry. He was born in Spring Lawn, Pa., in 1855. He came to Holyoke when about 30 years of age and entered the employ of the Valley Paper Company, where he learned the fundamentals of paper making. For the next 15 years he was located in mills at Middletown, Ohio, Kaukauna, Wisconsin, Orono Maine, and others and in 1893 was in charge of the paper mill machinery exhibit at the World's Fair in Chicago. About 1900 he returned to Holyoke and entered the employ of B. F. Perkins & Sons as consulting engineer where he remained for many years and did notable work at the company's mill at South Hadley, the Japanese Tissue Mills. By this time he had shown considerable inventive capacity and had taken out several patents for increasing the efficiency of paper machines.

His work came to the attention of the management of Great Northern Paper Company, and on January 1, 1914, he came consulting engineer for the company and remained as such to the time of his death. In this capacity of consulting engineer he devoted most of his time to the development of new methods for the automatic passing of paper through the paper machines. The limit of human skill and dexterity of machine operators in carrying the paper over the machine was about 700 feet per minute, and it was highly desirable that higher speeds should be employed. Mr. Popes task was a difficult one, but by reason of his intentive ability, backed up by a practical knowledge of paper making, together with a remarkable perseverance, he accomplished his purpose early in 1919 so that machine speeds are no longer limited by the tender's skill, compressed air devices having taken the place of hand manipulation. The series of inventions for accomplishing this result, including a remarkably ingenious and efficient reel rolls may be changed at any speed without waste of paper and the tender's liability to injury greatly reduced, constitute the crowning achievement of Mr. Pope's life, and the Pope Appliance Corporation was organized to make his improvements available to paper manufacturers generally.

Mr. Pope was very widely known among paper mill employees through his long service in various mills. He was highly regarded by all with whom he had been associated and all will regret to learn of his death. He leaves a wife two daughters and three sons the oldest of which, Thomas, has been connected with the paper industry since his graduation in 1917 from the University of Pensylvania, and is now with the Belgian Industrial Company at Shawinigan Falls. Mr. Pope leaves also a brother, Edward J. of Paper Engineering Company, St. Joseph, Mich.

Funeral services were held in Springfield on September 1st, Rev. O. T. Fletcher of the Park Congregational Church officiating, and the burial was in Oak Grove cemetery.

A. Haug

Modern Washing System for Waste Paper Recovery Plant

The manufacture of paper from waste papers has been much discussed recently, and the processes and apparatus employed are certain to command much interest on account of the financial success which is shown by present, up-to-date waste-paper recovery plants.

A basic feature in the operation of such plants, for securing large and lasting return is, of course, the use of efficient, well-designed machinery which has proven its value.

Use of Three-Cylinder Washer

The tendency to take advantage of a continuous process has become well-marked in waste-paper recovery, and much attention has been given to the three-cylinder washer, which authorities call "the ideal type of washing machine".

The only drawback in the use of the ordinary cylinder washer was its rather crude construction. Engineers have been at work, however, perfecting this machine to a point where the most scrupulous practical, as well as scientific, man will feel satisfied as to its superiority.

Furthermore, by the addition of other suitable machinery, the work of the cylinder washing has been even further improved, and the stock which has been washed in the new system possesses an unusual brightness and cleanliness.

A system similar to that shown in the cuts is in operation in one of the leading mills in this country, and undoubtedly will soon attract much attention.

Description of System

Figure 1 is an elevation of the new washing system, and Fig. 2 is a plan of the same.

At the extreme left of the drawings, is a stuff chest and stock pump, combined, which makes it unnecessary to use a separate stock pump. The agitators in this stuff chest are of the latest type, and give a very thorough agitation and mixing, with a minimum power consumption.

At one end of the machine is a bucket wheel, the buckets or which are scientifically designed and elevate a constant quantity of stock, irrespective of the liquid level in the chest. With a small hand-wheel, the quantity of stock which the buckets discharge can be regulated from the platform on the side of the chest. The buckets will elevate very heavy stock without difficulty, use less power than a pump, and the whole arrangement is so simple that it can be practically forgotten after its installation.

The buckets deliver the stock into a spout where it is thoroughly mixed with water.

From the platform mentioned above, a view may be obtained of the operation of the entire system.

Next, the stock passes through the gravitator, which removes fine, heavy dirt, such as sand, pins, etc., and fine floating dirt, including cinders, too fine to be removed by the screen.

The gravitator replaces the crude, old-fashioned rifflers, and is designed so that one man can clean it out in five to ten minutes. The setting of the dirt-retaining

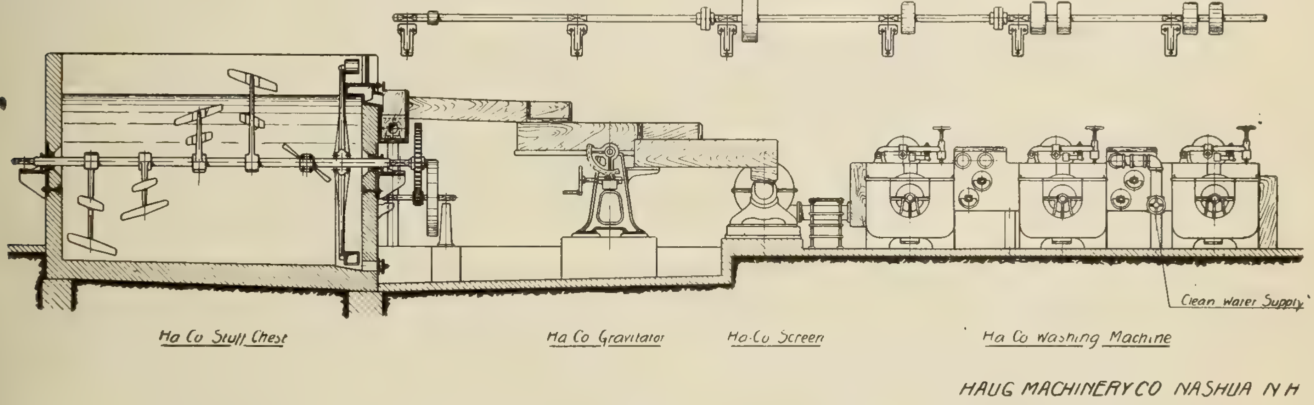

Fig. 1

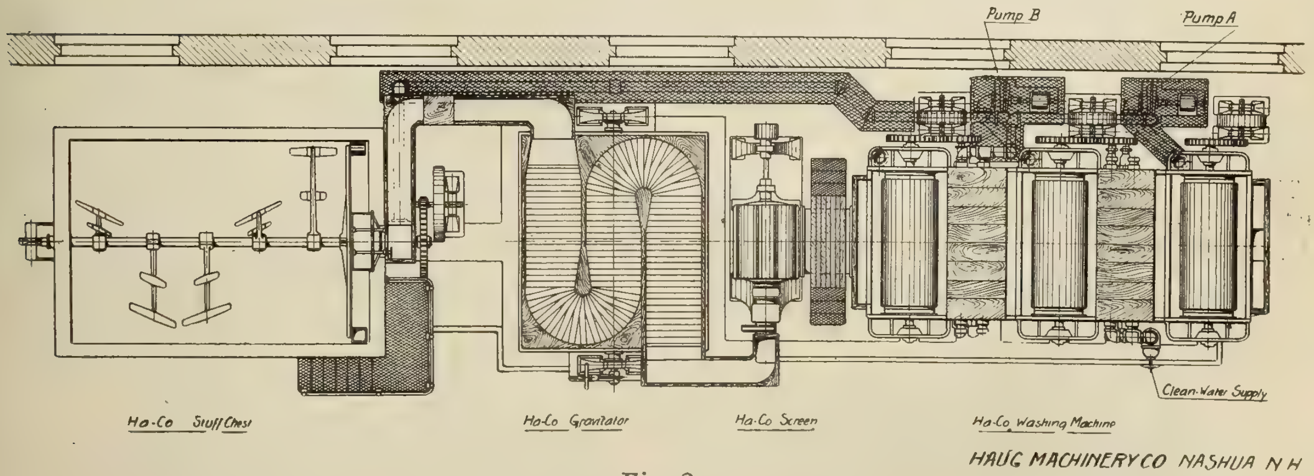

Fig. 2

parts is the result of many experiments, and makes it possible to clean the stock more thoroughly and in much less space than with the old rifflers.

The stock then passes through the screen, which removes the rest of the dirt and foreign matter. From the screen, the sock enters the washing machine.

Washing Machine

The washer, shown in the cuts, has many new features, which increase its capacity, make it practically foolproof and simple to control.

The four--point waste water overflow gives the cylinders a maximum capacity.

The new set-in cylinder bearings add to the rigidity and stiffness of the molds, and the same time, make the overall dimensions smaller than usual. No bearings run in water; all are lubricated by self-oiling devices.

The stock which is removed from the liquid by the cylinders is picked up by the couch rolls and the dirty water is pressed out of it. These rolls are spirally wound (not jacketed) in a new way, and have a permanently soft, elastic surface, which saves the wires and has a remarkable faculty for picking up stock. With the improved couch roll support, the perfectly round surface of the couches can be preserved indefinitely. Moreover, this new support makes it impossible for the operator to use uneven pressure on the couches.

The pressed-out stock drops into an agitating and mixing through, which is equipped with special, very efficient agitators, where the mats of stock are broken up diluted with water.

The standard washer consists of three cylinders and two agitating chambers.

Economical Use of Water

The water consumption is small, on account of the economical way in which the water is handled. 80 per cent. to 90 per cent. of the ink is removed in the first cylinder. This water is not used again for washing. The water from the second cylinder is pumped, by pump B, to the stuff chest, where it is used for thinning the stock delivered by the buckets. The water from the third cylinder, which is of course the cleanest, is pumped by pump A, into the first agitating trough and here used as thinning water. The only place where clean, fresh water is used is in the final washing operation in the last agitating trough.

Complicated Mechanism Avoided

The entire mechanical equipment has been standardized, and all complicated mechanism has been eliminated. No special attendant is needed, since the entire system is continuous and automatic, requiring little care after it has been started, and *one man* can easily start it.

The power consumed is comparatively very small - a factor which has been an important influence in the adoption of such systems.

Summary of Advantages

The advantages of the system described may be summed up as follows:

1) Simple to control
2) Small power
3) Small quantity of water consumed
4) No special attention required
5) Cleaner and brighter stock

The Washing System described is manufactured by Haug Machinery C., Nashua, N. H,

TWINE VS. GUMMED TAPE

A unique comparative test of the relative economy of twine and gummed tape for wrapping packages in the retail stores of a great national shoe company has shown a saving of $1,556 in the marketing of 500,000 pairs of shoes. The detailed figures follow:

Cost of twine for wrapping Regal Shoes, per lb.	$ .75
Yards per pound - (average)	
Necessary to wrap one pair of shoes, 3 yards (average)	
One pound of twine will wrap 212 pair of shoes at a cost of	.75
Cost per pair	.003538
Cost per 500,000 pairs	1769.00
Cost of sealing tape, 1¼ in. wide, per roll	.21¼
1 roll - 500 feet	
Necessary to wrap one pair shoes, 1 foot	
1 roll will wrap 500 pair at a cost of	.21¼
Cost per pair	.000426
Cost of 500,000 pairs	213.00
Saving the first year	1550.00
This more than pays for the machine installed viz:	65

Editor's note: We believe further that the use of tape would mean faster work thus reducing labor cost. And it makes a better package.

ARRANGED FUEL FOR CHICOUTIMI MILLS

Quebec, September 1. —Mr. J. E. A. Dubuc, general manager of the Chicoutimi Pulp and Paper Co., left today for Chandler, returned yesterday on board the Empress of France from a three weeks' trip in England. "I have completed arrangements by which ships coming to Chicoutimi to load pulp will bring cargoes of coal," he stated, "and this will be sufficient to meet the requirements not only for the mills of the company but for the city of Chicoutimi and the whole Lake St. John district."

Mr. Dubuc announced also that while abroad he completed contracts for the sending abroad of all the pulp manufactured by his company.

HOW TO MAKE SALESMEN

What's the best way to "make" salesmen? Darby A. Day, manager of the Chicago branch of the Mutual Life Insurance Company of New York, answers in an article in the February issue of "System," Mr. Day draws from his long managerial experience and tells in an entertaining and straight forward manner, the methods in making successful life insurance salesmen. Here is two opinions.

"When a sales force is not selling there are two things the manager can do. He can look for other salesmen. Or he can look into his own methods with the salesmen he was. We have tried both ways, and I am frank to say we have found the second vastly profitable.

"I think our experience shows this: That you can make a man of almost any type into a salesman—if he has the earnestness—but you cannot make any two of them into the same kind. And you cannot even attempt it without damage."

Mr. Barmjum presents a very strong case for an embargo on pulp wood and for the electrification of our railways. Personally, we favor a stiff export duty—to be applied to forest conservation.

The Sizing of Boards

One often hears complaints that, despite the use of large amounts of size, it is impossible to manufacture an absolutely size-fast board. The fact, is that the sizing of boards is a process of far greater detail than paper sizing, and therefore larger quantities of rosin are required. Whereas under favorable conditions one can make a good writing paper with only 3 per cent of rosin soap, the application of a similar quantity of rosin produces a board only one-quarter sized.

The causes of a defective action of the size are very various. Among other factors the properties of the water of manufacture are of great significance. A few instances may be mentioned to demonstrate this. A mill, which had been using river water with perfect success, subsequently used spring water, which proved too hard for sizing. In another case a board mill situated donstream from a sugar refinery met with no end of difficulty owing to the slime carried by the river water. While the sugar factory was in operation the effect of the slime had to be counteracted by the additional use of alum, for otherwise, and in spite of the much greater consumption of rosin, it was impossible to obtain size-fastness. The substitution of spring water failed to remedy the difficulty, for the spring water contained sodium chloride. Later this water was only used for filling and washing the bleaching engine, yet it was quite useless even here, owing to its influence upon sizing.

Paper is relatively easier to size than boards, and for this reason: the drying process facilitates paper sizing. During drying the sheet lies on the surface of a hot cylinder, and the particles of rosin imbedded in the fibers are melted, whereby a cementing of the fibrous mass follows and the pores are closed. That this fusion of the rosin takes place is evident from a circumstance that deserves closer consideration. With papers highly glazed on one side, we often note that the glazed side is not size fast, while the under side usually shows a good sizing, I incline to the explanation that the size is not destroyed by heat, but that it is forced to the under side by the vapors of steam which are present, under pressure, between the cylinder and the sheet.

It makes a difference whether the paper runs loose on the cylinder, or whether it is pressed upon it by the felt, or whether it sticks in its still moist condition to the roll, as it does when on the reels. In the first case vapors collect between the paper and the cylinder, and lift off the sheet when the pressure becomes too great, or when the paper is too air-tight. In the second case this effect is not possible, provided we take the necessary care to leave the sheet on the polished surface of the cylinder long enough to form the glaze. Under these conditions vapors of steam have the force to press the rosin—now in a fluid state—through the fibers. In respect of boards the conditions are essentially different. The main object is the process of drying. In air drying melting of the particles of rosin is not possible, nor in the system of tank drying, that is, with warm air. It nearly always works out that boards, as compared with paper, require greater quantities of size.

To develop good sizing in boards not the least important condition is a suitable quality of stock. Porous stuff is more difficult to size than that of shorter and thicker fibers. The cause is easy to discover for anyone who follows the manufacture of paper and boards. By adding alum or similar agents that precipitate solutions of rosin, the rosin emulsion is changed into a flocculent mass. If this were not done, only a few particles of the rosin emulsion could be retained by the fibers, in view of the excess of water that is present. The solution of size would then be diluted too much, and the rosin would be carried off as the water flows away. On the other hand if the alum forms flocculent bodies in the size emulsion, these particles are capable of being held fast in the fibers, and consequently are incorporated in the board. Otherwise, if the stock is very loose and porous, a proportion of the particles of rosin find their way through the interstices in the fibers and escape; hence the action of sizing fails. Dense fibers present fewer opportunities for such a result. In this connection it may be noted that thin paper sizes with much greater difficulty than thick, which is to be ascribed to the fact that the fibrous layer is not of sufficient density to retain the escaping particles of rosin. If, besides, the stuff is spongy and porous size-fastness is scarcely attainable or only at great cost. At thic stage the more precipitating agents used, the coarser become the flocculent particles, that is up to certain limits, and the more particles are taken up by the fibers.

In paper making suitable treatment of the stock is indispensable in order to reach a proper degree of transparency. With boards, on the contrary, we set less value—except in special cases—upon thickness of the stock. In most cases we are satisfied with edge-running the paper waste and mixing for a short time in the hollander, but without further grinding. Stock thus prepared is, and remains, porous. Another detail comes in here — a board consists of thin layers joined together. These thin porous layers of fibers render only too easy the escape of particles of size. If the board was made of one layer of material throughout, absolutely no particles of rosin could escape, for the "filtering stratum" would be too dense. If such a board had been feasible, we should have dispensed with winders long ago, since a board of a single layer possesses still other advantages.

It will be seen that the sizing of boards presents difficulties of which the causes are various; only they are usually not investigated closely enough. Much sizing material could be saved if the troubles were cleared up from their original causes. Even now the influence of the feed water is ignored in many mills.

In what manner does this water influence sizing? The answer is possible only when an analysis is before us. In the first place the fibers come in contact with the water and by suction become saturated, whereby the foreign bodies carried with it are introduced into the stock. Every fiber acts as a filter, allowing water to pass through while retaining solid particles which choke up the cellular tissue in such a way that suction of the size is no longer possible. Take a bath sponge, for instance, and place it in a solution of kaolin; then after it has sucked up this fluid to saturation, lay it in a solution of rosin. The sponge may be left all day in the solution of size but its interior will not show a trace of rosin; the kaolin solution does not allow it to enter. If the process is reversed the result is as follows: Kaolin is heavier than the solution of rosin and subjects it to pressure. This pressure, setting in equally from all sides, encloses the solution of size as in a ring, and prevents the particles of rosin from escaping. The same thing is true of the fibers of the stock, only in a smaller degree. It is thence to be inferred that it is not a matter of indifference which substance first comes in contact with the fibers. Care should always be taken to saturate the fibers first with the size. Thus after the hol-

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* From Pappen Und Holzstoff-Zeitung, No. 30, 1921. Translated for "Pulp and Paper Magazine" by Dr. P. Bartholow.

lander is charged, the size is added first, the alum immediately after, or as soon as the size is well distributed in the stock, when it forces its way into the fibers and flocculent particles are formed within them by the alum. If this is effected the size cannot be forced out, and there is still space for the introduction of a heavier substance. The procedure is the more effectual the denser the stock in the hollander, because then the fibers are the more capable of taking up size.

GOOD SHOWING BY SPANISH RIVER

The annual report of the Spanish River Pulp and Paper Mills, Limited, made public this week, was not greatly out of line with general expectations. Covering as it does the twelve monthly period ended June 30th, 1922, over one-half of which was marked by acute business depression in the pulp and paper industry the exhibit, showing a surplus after meeting all charges and the payment of the regular dividens, together with constructive changes in its balance sheet, can hardly be regarded in any other light than satisfactory. It would obviously have been folly to have expected a report of spectacular earnings during the period under review—a period of stagnant markets and declining prices.

The report shows earnings equivalent to 8.07 on the common after figuring as a prior charge the appropriation of $317,766 for the bond sinking fund reserve. It is contended that this charge might be properly made upon the consolidated surplus account, in which event the earnings would be equivalent to 11.6 per cent on common. This seems to be largely a matter of bookkeeping upon which the public can make its own choice.

Besides the usual preferred and common dividends, there is a bondholder's dividend of $137,005 taken into account, making the total appropriations for the year $1,687,821, as against net income of $1,784,917.

Operating earnings for the year fell about $1,475,000, compared with the preceding year, which, it will be recalled, represented a period of general higher prices. Interest charges increased slightly, but the appropriation for taxes and contingencies were down from $500,000 to $150,000. Net profits dropped from $2,963,150 to $1,784,917. The surplus carried forward amounted to $97,096, compared with $1,288,998 in the preceding year.

NATIONAL SAFETY COUCIL MEETING

At the Detroit meeting of the National Safety Councel held August 28th to September 1st, the Canadian paper industry was represented by the Canada Paper Company, of Windsor Mills, Quebec, which sent two representatives, and Mr. A. P. Costigane, who represented the Ontario Mills in the capacity of Secretary and Engineer of the Ontario Pulp and Paper Makers' Safety Association.

Mr. Costigane contributed to discussions in the Pulp and Paper section and the Engineering section, of whose executive he is a member.

In conjunction with the American Engineering Standards Committee a safety code is being planned for pulp and paper mills.

M. F. Crass of the Grasselli Chemical Company, read a paper on "Safety in the handling of acids." Mr. Costigane contributed to the discussion of this subject, a brief address on handling of acids in the paper industry.

Many a man who thinks he is a whale is a poor fish.

SOUTHERN STATES HAVE PAPER MANUFACTURING FUTURE

That the paper industry is more and more turning its attention to the southern pine forests as a future source of raw material for the mills now located in the north, because of the possibility of more economical practice of forestry in those states, and a more rapid production of a timber crop is indicated by an article by Oliver M. Porter Secretary of the Woodlands Section of the American Paper and Pulp Association, in The paper and Pulp Industry, the monthly publication of the Association. Capt. Porter as a technical forester, was in France for nearly two years during the war period, getting out fuel wood for the American army, and on his return went to the paper industry as Secretary of the Woodlands Section which handles the forestry problems of the American Paper and Pulp Association. Lately he has also become Secretary of the Pulp Manufacturers Association of which Thomas O. Ross of the Hummel-Ross Company of Hopewell, Va. is president.

In this technical review of southern forestry possibilities. Capt. Porter makes this conservative statement:

''A survey of the available supplies of spruce, hemlock and balsam pulpwood indicates a rather general shortage of this material, with, unfortunately, only too little definite information and facts as to the location and extent of the remaining pulpwood tracts, and the rate of growth on the lands which have already been cut one or more times for pulwood, lumber or other forest products. The approaching pulpwood scarcity, together with the supplies of cheap labor and fuel in the South, indicate unusual opportunities for the development of the paper industry and the southern pineries. Foresters who are familiar with the character of tree growth in these regions claim a rotation for the southern pines, at least for pulpwood size, of from fifteen to twenty-five years. This means that under sustained yield management a tract of southern timberland would produce pulpwood not less than four times as fast as a tract of equal area in the north.

''The chemical problems in the utilization of the southern pine are rapidly being overcome, so that pine pulpwood will gradually find its way into many other grades than coarse wrapping and kraft papers. This movement for the utilization of the southern pine in the manufacture of paper is reflected in requests to the Woodlands Section for information relative to the methods of peeling pine pulpwood, and the costs of pine logging operations.''

U. S. PRODUCTION IN JULY

The latest Federal Trade Commission report shows that production of paper in the United States declined in July, a total of 552,914 net tons of all kinds of paper being produced in this country during that month, compared with 593,335 tons in June, 589,971 tons in May, and 528,461 tons in April. July production, however, was far above that in the same month of last year when 370,429 net tons were produced, but was below the output of 658,518 tons in July, 1920, which was the record-breaking month during the boom period. A very encouraging feature of the Commission's report for July is that mill stocks underwent a considerable decline during that month, stocks being reduced to a larger extent than probably in any month in some time. At the end of July U. S. mills had 280,660 net tons of paper of all kinds in stock, whereas at the beginning of that month stocks amounted to 293,066 tons, showing a decrease for the month of about 13,000 tons.

BELGO PAPER CO. INCORPORATED IN CANADA

It was reported last week that negotiations for the transfer of the Belgo-Canadian Pulp and Paper Company from Belgium to Canada had at last been successfully concluded. It was stated that the new name of the company will be the Belgo Paper Company, with head offices at Montreal, and mills as at present, at Shawinigan Falls. The new company will have an authorized capital of $20,000,000 common stock, of which $14,000,000 will be issued and in addition, $1,500,000 in bonds. It was further intimated that the output will be increased by next year from 200 to 350 tons daily, amounting to slightly over 100,000 tons a year.

This company was incorporated with Belgian capital 22 years ago and has remained under Belgian control ever since with H. Biermans, not a Belgian, but a native of Holland, in charge of the Canadian operations. It has had a most successful record and when the first report is made public early in January it will make an impressive showing. It is understood the company at the present time has not one dollar of bank indebtedness and, in addition, has a large total of net working capital. No dividends have been paid on the common stock since its inception with the exception of $10 a share several years ago.

It was in the year 1900 that the plant was started first for the manufacture of groundwood pulp, as the "Belgo-Canadian Pulp Co." In 1904, 25 tons of paper were produced when a paper machine was introduced and the amount of daily production gradually increased up to 1908 when it reached 100 tons daily. In 1916 the plant was overhauled and renewed, and another large machine added and the production brought up to about 200 tons a day where it has remained ever since.

The capitalization of the Belgo-Canadian Pulp & Paper Co, was $900,000 of first preferred and $300,000 of second preferred, and $2,500,000 of common. The preferred stocks each paid 6 per cent. regularly. Several years ago when it was decided that it was advisable for the headquarters of the company to be changed to Canada and a Canadian charter to be secured, an intermediate company was formed namely the "Belgian Industrial Co.," which took over the preferred and common stock of the Belgo-Canadian Pulp & Paper Co. and gave in exchange 56,000 shares of common stock of no par value. This company was in existence for 16 months and went out of existence on Friday of last week and the Belgo Paper Co. began its career. It is understood that for each share of the Belgian Industrial Co. $250 was paid the shareholders of par value in common stock of the new company, the Belgo Paper Co.

A meeting has been called in Belgium on October 24 to ratify the transfer. Early in January a four-months' statement will be made public covering the period from September to December inclusive, and it is expected that some time in January the new stock will be listed on the Montreal exchange. No announcement has been made as to dividend expectations on the $14,000,000 of common stock but the earning power of the company would warrant a fair dividend at a comparatively near date in the future.

It is understood that the bonds of the new company, which will bear interest at 6 per cent. and extend for 25 years, have been underwritten by a financial house in Montreal and will shortly be offered to the public.

The Belgo Paper Co. has excellent limits on the St. Maurice River along which the plant is located amounting to about 1,700 square miles, and estimated to contain about 6,000,000 cords of excellent pulpwood. Power is supplied the company by the Shawinigan Water & Power Co., generated in the same centre.

The officers of the new company are as follows:

President, Adolphe Stoclet, Brussels; vice-president and general manager, H. Biermans, Shawinigan Falls; other directors, Count Hypolite D'Ursel, Alfred Bouvier, Lambert Jadot, Gaston Perrier, Albert Marchal; sec-treasurer, A Dehauffe.

The Editor visited the plant this week and found that excellent progress was been made on the new paper machine building. The new ground wood mill is doing nicely and new production records are being made in the paper mill.

COAL

In view of the present labor troubles in the coal industry, and in consideration of the partial dependence of Canada on American coal, a brief analysis of the world production and visible supply of coal is of interest.

In 1920, the amount of coal produced in Canada was 16,623,598 tons, and the average annual production during the ten years from 1910-1920 was more than 14,000,000 tons. This is less than half the amount that Canada requires, the balance being imported mainly from the United States. The latter country, however, imports a small amount of Canadian coal as well. Since the great industrial region of Canada, comprising Ontario and Quebec, contains practically no coal, it is therefore necessary to import annually about 4,750,000 tons of Pennsylvania anthracite and a much larger amount of bituminous coal from the northern Appalachian region. At the same time, Canada exports varying amounts of coal from New Brunswick and Cape Breton to the New England States, and a certain amount of Alberta and British Columbia coal goes annually to the north-western States. The exchange of coal between Canada and the United States thus is affected only slightly by political boundaries; its distribution is determined rather by the cost of transportation. The Canadian visible supply of coal for the twelve months ending with April, comprising all coal imported or mined, less exports, was 30,345,000 tons, against 35,562,000 for the previous twelve months.

The world's total available reserves of coal were estimated by the World Geological Congress, which met in Canada in 1913, at about 7,397,553 million metric tons. Of this total the United States has the largest share, namely, 3,838,657 million tons, or about 52 per cent of the total; Canada stands second with 1,234,260 million tons, or 17 per cent of the total; China has about 995,587 million tons, Germany approximately 423,356 million tons and the United Kingdom 189,553 million tons.

In regard also to production, the United States ranks first. During 1921 the total world production, according to a statement recently published by the National City Bank of New York, was 1,120 million tons, in comparison with 1,342 million tons in 1913. Last year the United States produced 441,426,000 tons, or about 40 per cent of the total. The United Kingdom produced 163,000,000 tons which, however, on account of the British coal strike last year, was much lower than the average annual British output.

The United Kingdom was a better customer of Canada than the United States for the twelve months ending with July. The total exports of Canadian produce to the United States for that period were $304,000,000 and to Great Britain and Ireland were nearly $307,000,000. These figures are from the monthly summary of trade issued by the Dominion Bureau of Statistics.

Technical Section

REVIEW OF RECENT LITERATURE

A. Properties, Chemistry and Testing of Raw Materials and Finished Product

A-1. Reagent for Wood and Vanillin. J. GRUS. **Ber. Deut. Botan. Ges.**, xxxviii, 361-368, (1921); **Analyst,** xlvi, 253 (June 1921). When a wood shaving is dipped into a solution of vanadium pentoxide in dilute phosphoric acid the cell walls gradually assume a yellowish brown color. The addition of vanillin to this reagent produces a reddish brown precipitate, or if the test be applied on a microscope slide reddish-brown crystals may be observed.—A.P.-C.

A-1. The Acetyl Content of Lignin. HANS PRINGSHEIM and HANS MAGNUS. **Z. Physiol. Chem.**, cv, 179-186, (1919); **Chem. Soc. Abs.**, cxvi, Pt. 1, 473, (1919). The authors have investigated the origin of the acetic acid produced in the dry distillation of wood and in the processes by which wood and straw are broken down by alkaline digestion. In the latter process, the whole of the acetic acid formed is derived from the lignin substance when the digestion is carried out without heating. If, however, the wood or straw is trated with a solution of sodium hydroxide at the boiling point, with or without the use of increased pressure, a small fraction of the acetic acid formed has its origin in the cellulose. The lignin prepared according to the method of Willstatter and Zechmeister **(Z. angew. Chem.**, xxxii ,41 1919) is not idential with the natural product, since it has undergone hydrolysis and has lost its acetyl groups. The natural product may be regenerated by acetylation. The lignin from hornbeam contains nearly double the number of acetyl groups in the lignin from pine-wood.—A.P.-C.

A-12, K-10 Manufacturing of Aluminum Sulphate for Sizing Paper. G. MUTH. Can. Patent 220, 381, July 4, 1922. Same as Fr. patent 515,314. See this Journal, xx, 658, Aug. 3, 1922. -A.P.-C.

A-15 Manufacture of Cellulose Acetates. J. O. ZDANOWICH. Can. patent 220, 531, July 4, 1922. Same as English Patent 139, 232 and U. S. A. Patent 1,347,-801. See this journal, xxix, 622, June 9, 1922.—A.P.-C.

A-15. Examination of Wood Cellulose. F. LENZE, B. PLEUS, and J. MULLER. **J. Praft. Chem.**, ci, 213-264, (1920-1921); **Analyst,** xlvi, 106, (March 1921). Digestion of cellulose with 17 per cent sodium hydroxide solution, for the separation of alpha-cellulose, effects solution of its other constituents, such as oxycellulose, hydrocellulose, cellulosedextrin, hemicelluloses, pectin, lignin, resins, and fat; for the determination of these the solution is first treated with acids and alcohol. For the estimation of oxycellulose, 10 g. of air-dried cellulose are treated with 100 cc. of 17 per cent caustic soda solution for 1-2 hours, 100 cc. of water are then added, the mixture is passed through a porcelain filter, and 100 cc. of the clear filtrate transferred to an erlenmeyer flask. The residue on the filter is washed with water, digested with 5 per cent acetic acid, washed till neutral, and then treated twice more with caustic soda solution as before, 100 cc. from each filtrate being added to the original amount in the flask. The solution is neutralized with concentrated nitric acid and then heated on a water bath for three hours with 125 cc. of 20 per cent nitric acid and 500 cc. of water. The residue is collected on a tared filter, washed with warm water till neutral, and dried at 100° C. to constant weight. This method is preferable to the determination of the copper number, which gives only empirical results. Hemicelluloses are identified by converting them into sugars by heating for 5 hours with 4 per cent hydrochloric acid. For the estimation of xylose, derived from xylan by the furfural distillation, an improved apparatus has been devised. It comprises a 300 cc. round-bottomed flask with a long neck, into which the still-head is closely fitted by means of a ground glass joint and maintained in position by a spring clip. The still-head is bulb-shaped and terminates above in a funnel and stopcock. A lateral tube is fused into the bulb with its end projecting slighly into the interior and bent upwards and the other end of the tube has a bend at a right angle passing through a rubber stopper into a Leibig condenser. A graduated measuring flask receives the distillate. The heating bath consists of calcium chloride solution with a surface layer of paraffin or vaseline to check evaporation. The furfural-yielding constituents of cellulose exist partly as xylan and partly as a more firmly combined complex compound. The presence of mannan is indicated by the formation of mannose on hydrolysis with weak hydrochloric acid; mannan is more easily separated than xylan.—A. P.-C.

B. — Forestry

B-5 Portable Tree Felling Saw. A. O. M. LOFGREN, assignor to A. G. M. H. DJURSHOLM and O. R. GRONKWIST. Can. patent 220,181, June 27, 1922. A band-saw is engaged in a frame which is made to stretch the saw and which is provided with deviating rollers over which the saw travels.—A.P.-C.

B-5 Portable Tree Saw. G. H. ANSON. Can. patent 221, 202, July 25, 1922.—A.P.-C.

B-5. Combined Tree Feller and Log Saw Rig. G. S. ABBOTT and F. WHITENACK. Can. patent 217,706, April 11, 1922.—A.P.-C.

C. — Wood Preparing and Equipment

C-2, K-18 Wall Board from Wood Waste. H. F. WEISS assignor to WOOD CONVERSION CO. Can. patent 220,477, July 4, 1922. The board consists essentially of a filler and a binder, the former consisting of "fiber aggregates", e.g., sawdust, which has been ground or crushed between revolving discs, and the latter of "hydrated cellulose" cosisting of a slimy gelatinous structureless mass obtained by repeatedly grinding saw mill waste (sawdust, hogged and chipped slabs, etc.) between revolving discs. The binder (at least 25%) and the filler (at least 30%) are mixed in suitable proportions in a mixing chest, sized and colored if required, delivered on a travelling canvas belt or conveyor, on which it is pressed in a hydraulic press, and finally dried, e.g., in a tunnel kiln. The finished product can be worked and finished practically in the same way as wood.—A.P.-C.

D. — Groundwood Manufacturing and Equipment

D-2, E-2, F-2, K-2 Recovering Pulp from Pulp or Paper Mill Waste. G. J. MANSON. Can patent 221,-134, July 18, 1922. The mixture of waste fibers and water is pumped through a thickener, water is added, and the mixture is passed through a knotter and a screen, the rejects being ground and returned to the system, and the good fibers being sent to a wet machine. (It is hard to see wherein lies the novelty!) A.P.-C.

D-4 Wood Grinder. P. PRIEM. Can. patent 219,733 June 20, 1922. One large press is used per stone, the bearing plate (or pressure foot) being curved to the shape of the stone. A group of these grinders are driven from a single source of power, and a governor common to the whole group is used to distribute the power properly when charging any one of the presses.—A.P.-C.

D-4. Artificial Grinder Stone. H. A. ROTHCHILD, assignor to KIMBERLY-CLARK CO. Can. patent 221,052, July 18, 1922. One hundred parts of round-grained sand are thoroughly mixed with 10 parts of finely ground china clay and 10 to 23 parts of "liquid silicate of soda" are added. The mixture is poured into a mold, subjected to a pressure of 400 pounds per square inch (in a direction parallel to the axis of the stone), and the mold is removed. The cast is subjected to a temperature of about 60°C., which is gradually raised so as to reach 300°C in about two weeks, maintained allowed to season for a few weeks before using.—A.P.-C.

Equipment

E — Acid Processes of Pulp Manufacture and

E-2 Continuous Evaporation of Sulphite Waste at 300° for one week, cooled gradually, and preferably **Liquor.** E. S. SANDBERG. CAN. patent 217,774, April 18, 1922. The liquor is forced at a high speed through heating elements which are heated by means of compressed vapors generated from the liquors, so that a small difference of temperature can be maintained between the liquid and the heating vapors. The liquor is under sufficient pressure to prevent any boiling in the heating elements. It is then introduced into an expansion chamber where the pressure is relieved and the vapor thus generated is compressed and used for heating. The gas is first separated in a conccentration chamber prior to any substantial amount of boiling. —A.P.-C.

E-2 Process of Obtaining Tanning Materials from Sulphite Waste Liquor. A. ROMER. Can patent 220,399, July 4, 1922. The sulphur dioxide is removed by treating with a calcium salt, the calcium sulphite is filtered off, and the excess of calcium is removed by means of soda ash. Finally, an amount of hydrochloric or sulphuric acid is added sufficient to convert 50 to 100% of the alkali lignisulphonate into the free acid, avoiding an excess. An equivalent amount of aluminum, iron or chromium chloride can be used instead of the strong acid.—A.P.-C.

E-2 Method of Utilizing Sulphite Waste Liquor. P. A. PAULSON. Can. patent 221,600, Aug. 1, 1922. The liquor is heated under pressure to precipitate the lignin and resinous matter, the steam and sulphur dioxide given off being led to a digester. The precipitate is dried and burned under a boiler, the steam generated being used to heat the waste liquor, and the flue gases being used to dry the precipitate lignin. —A.P.-C.

E-2 Continuous Process of Decomposing Sulphite Waste Liquor. K. MORCH. Can. patent 221,733, Aug. 1, 1922. The waste liquor is heated to a suitable degree in a preheater, and fed (by means of a pump or injector) continuously to a container kept under such high pressure that decomposition into calcium sulphate and lignin takes place immediately. The precipitate, liquor and gas removed continuously and separated in any suitable manner.—A.P.-C.

F. — Alkaline Processes of Pulp Manufacture and Equipment

E-0. Hardening of Sulphite Digester Lining. C. H. JOHNSSON. Can. patent 220,028, June 27, 1922. The fresh lining is subjected to the action of sulphur dioxide gas instead of to the action of sulphite cooking liquor. Top relief from another digester may be used. —A.P.-C.

E-0. Pipe Line System for Sulphite Digesters. T. McA. STEWART, assignor to T. McAVITY & SONS, LTD., Can. patent 220,770, July 11, 1922. The portions of the steam inlet and pulp outlet which are most subject to wear from the pulp and acid are reinforced so as to obtain, as nearly as possible, uniform wearing of the whole fittings. —A. P.-C.

E-2 .The Aldehyde Content of Sulphite Alcohol. RUDOLPH SIEBER, Kramsfors. **Svensk Papers-Tidning,** Sept. 15, 1920; **Pulp and Paper,** xix, 719,728, (July 7, 1921). Translation by Paul Bartholow.. See, this journal, xix, 962, E-2, Sept. 15, 1921.—A.P.-C.

F-2, F-4. Recovery of Soda Waste Gases in Soda and Sulphate Pulp Manufacture. O. NORDSTROM and A. MORCH. Can. patent 220,300, July 4, 1922. The hot cases from the furnace are passed through a filter consisting essentially of chips to be cooked. The chips are thereby dried and at the same time remove any soda entrained by the gases. The process is continuous, fresh chips being continuously supplied.-A.P.-C.

F-5. Pulp Cooking Process. L. BRADLEY and E. P. McKEEFE. Can. patent 219,557, June 13, 1922. The chips are cooked at 110 to 140 lbs. for 3 to 10 hours with a solution containing about 30 to 40% of sodium sulphite on the weight of air dry wood. In the case of by a slight caustic soda treatment, which is stronger resinous woods, the sodium sulphite cooking is followed, the more resin the wood contains, and which may be carried out either in the digester, on the screen tailings, or by washing the pulp with dilute sodium hydroxide. Considerable increase in yield and improvement in quality are claimed. The spent liquor can be fortified and used over again several times, and finally worked up for by-products.—A.P.-C.

G. — Pulp Treatment and Drying — Operation and Equipment

G-5. Decker. A. J. HAUG assignor to SHERBROOKE MACHINERY CO. Can. patent 219,143, May 30, 1922. Means are provided for driving the cylinder mold and couch roll in either direction, the couch roll being preferably driven at a slightly higher speed than the cylinder mold. The distance between the couch roll and cylinder mold is adjustable. When shutting down, the stock in the pulp tank can be discharged into the white water chamber.—A.P.-C.

G-5. Thickener for Pulp Tailings. A. J. HAUG assignor to SHERBROOKE MACHINERY CO. Can. patent No. 219,145, May 30, 1922. The tailings are delivered to the inner surface of a slightly tapered rotating screen drum. A roller presses against the drum near the lower, inner, ascending portion.—A.P.-C.

G-6. Riffler. A. J. HAUG. assignor to SHERBROOKE MACHINERY CO. Can. patent 220,545, July 4, 1922. The apparatus comprises two parallel separating devices having a common inlet, which consist essentially of large open troughs to either of which the stock can be admitted as required. The stock passes under a baffle plate and over a weir plate. Beyond the weir is a series of riffle plates inclined in the direction of flow of the stock and preferably arranged

(Continued on Page 794)

PULP AND PAPER NEWS

There is one point in the special report by Mr. R. O. Sweezey, consulting engineer, Montreal, on the Brompton Pulp and Paper Company, Limited, which has special reference to the management. The report is an exhaustive analysis of the timberlands, water powers, and mills of the company, and Mr. Sweezey criticises some portions of the plant which he considers could be made more efficient. At the same time he points out that the cheap and abundant supplies of pulpwood compensate for drawbacks in other directions. On the subject of management, Mr. Sweezey says: "Because management is such an important essential in every industry, and because it has been known to wreck even those companies of exceptional potential possibilities, a study of the management in connection with any industrial investigation is important. The wider the opportunity for comparison between various manufacturers within the same industry, the better can a conclusion be arrived at. It is, therefore, a matter of extreme satisfaction to record that the management of the Brompton Company is established on the soundest basis. The enormous expansion that has taken place in the Company since the present General Manager took hold is ample evidence of the consistent policy of progress and economy that has been the keynote. Often it is found that superfluous technical polish is as great a menace as the equally deplorable "practical" mind that refuses engineering advice. In the Brompton Company there is found the finest combination of harmony between these two essential elements that can be found anywhere. The General Manager has surrounded himself with such men and understudies as will assure the maintenance of the present high standard."

Shareholders of the Spanish River Pulp and Paper Mills, Limited, have received notice of the annual meeting in Toronto at noon September 28th in their offices, Bank of Hamilton Building.

Mr. John Martin and Mr. Peter Christie of the "B" department of John Martin Limited of Winnipeg were in Toronto for a few days last week.

Mr. Walter Meigs, of New York, Vice-President of the Lincoln Mills Limited, was a visitor at the Toronto Office of that firm last week.

A. G. Hinzke, superintendent of the Port Arthur division of the Provincial Paper Mills, was in Toronto last week, accompanied by Mrs. Hinzke, en route to Indiana.

Two Canadian paper firms have booths at the Canadian National Exhibition. The Interlake Tissue Mills has an attractive exhibit, showing numerous tissue products, including colored crepes, carbon copy papers, lunch and picnic accessories, toilets and wrappings.

The W. J. Gage Company exhibits fine lines of its well known "Holland Linen" writing.

Mr. John Buss, chemist, with the Bogalusa Paper Company, Louisiana, was in Toronto last week on his way through for a short visit at Mille Roches with his parents, before going to New York to attend the chemical exhibition and meeting of the T. A. P. P. I.

Wayagamack Pulp and Paper Co., Three Rivers, P. Q., has just issued an attractive set of 29 samples of their famous Kraft paper; There is M. G., plain, finestripe, and broadstripe, in various colors and weights.

BARNJUM $5,000.00 SPRUCE BUD WORM PRIZE AWARDED

By the unanimous decision of the Judges, Messrs. Gilber, Howe. Piché and Wilson, the first of $2,000.00 in this contest for a practical suggestion for the suppression of the spruce bud worm, bark beetle and borer was awarded to Mr. O. Schierbeck, Forest Engineer for Price Bros., & Co., Limited, Quebec, whose paper on the subject was the best effort of the 230 presented. The balance of the prize, namely $3,000.00 was divided equally, or $1,000.00 each to Doctors Swaine, Craighead and Tothill of the forest Insect Branch of the Entomological Department as a reward for the untiring efforts of a small band of loyal, conscientious, overworked and underpaid Government officials, who are giving the best of their life for the suppression of the forest insect peril in Canada, and from the fact that much of the information contained in papers presented was based on the results of their good work, and as no one paper qualified fully of the prize, Mr. Barnjum, with the hearty approval of the Judges, felt this would be a generous disposition of the prize money. Much valuable information on this important subject has been collected which will be given to the world free with full credit to the authors, who deserve and will be accorded the earnest appreciation of the people of the whole continent, which is so seriously menaced by these insect pests.

WESTERN FIRM TO ERECT PULP MILL

Vancouver, Aug. 31. —The contract for the first unit of the $13,000,000 pulp and paper plant at Elko, B. C., has been awarded to McDougall and McNeill, contractors, of Vancouver and Calgary, according to word received by Alexander McDougall, from his father, A. C. McDougall, senior member of the firm yesterday. The plant is to be erected for the Wigwam Pulp and Paper Company, and is financed by prominent Canadian and American newspapers.

The first unit will have a capacity of 100 tons daily and will cost about $3,500,000 while the remaining two units, to be commenced just as soon as the first unit is in operation, will bring the total expenditures to $13,000,000.

A serious fire occured last week in the Hudson River mill of the International Paper Co. and it is reported that two newsprint machines are out of commission.

NIPIGON FIBRE MILLS CASE

An application by J. H. Spence, K.C., representing the Canadian Packing Company, for an order to place the Nipigon Fibre and Paper Mills in the bankruptcy court, has been adjourned by Justice Mowat for the purpose of securing further material to determine who should have the conduct of the liquidation. The company has assigned to Mr. Troostwyk, of Port Arthur. There are a number of creditors whose claims are said to total over $150,000 not including a claim by the provincial hydro-electric commission for $90,000 for power supplied. Of the latter sum $40,000 is believed to be secured by a bond. The petitioning creditors ask that T. Duncan Roberts be named as receiver.

British Trade News

[From our London Correspondent]

London Aug. 26, 1922

With a view to developing output, the executive of the Empire Paper Mills (1922), Ltd.,—of which Mr. A. Baker is a Director and Manager—have almost completed arrangements with Messrs. Charles Walmsley & Co., Ltd., Papermakers engineers, Berry, for the erection of a new fast-running papermaking machine turning out finished paper up to 210-inches wide. When the job is finished the machine will be the widest in the United Kingdom.

The introduction of such a large machine in a British mill means the dawn of new era in British papermaking. It shows that papermakers are beginning to think of big schemes in machinery. Two machines will be scrapped to make room for the work of the big one, capable of an output of 350 tons a week, and the wiping out of the two go-in machines, thus giving an increased output of 150 tons.

Charles Walmsley & Co., Ltd., erected the widest papermaking machines 1232 inches, in the world at Iroquois Falls, Ont. The firm enjoys a most excellent reputation amongst paper manufacturers in England.

Canadian Pulp The Best

I have always mentioned how British papermakers appreciate Canadian pulps. This view, which has never been exaggerated, is borne out by Mr. J. E. A. Dubuc, of the Chicoutimi Pulp Co., who has been on a visit to London for the purposes of holding consultations with his old friend Sir Frederick Becker. Canadian groundwood, Mr. Dubuc says, is the best made in the world and British paper men say so. Canadian sulphite enjoys the same reputation and the large deliveries from Chicoutimi to various ports in the United Kingdom bears out these statements.

Mr. Dubuc entertains great hopes for Canadian pulp in the British market. The big contracts his firm has entered into prove the value of the market—a market which he values for its steady demand.

Mr. Irvine, Becker & Co's representative at Montreal, returned this week to Canada with Mr. Dubuc.

Waste Paper "King"

Mr. Joe Phillips, managing Director of Messrs. Phillips, Mills, & Co., Ltd., waste paper dealers, who died in July has left an estate of the gross value of £136,078—with net personalty £85,508. To many of his friends who rendered assistance directly and indirectly in amassing this fortune, Mr. Phillips left mementos of a substantial kind. He directed, in his will, that the Thames Paper Co., Ltd., of Purfleet, should have the option of the purchase of his interest in Messers. Phillips, Mills, & Co., Ltd.

Big Calais Fire

From the English coast a huge fire in the docks at Calais (France), can be seen. It originated amongst some blankets in a store belonging to the British Army and the flames spread to another warehouse containing 40,000 gallons of Army rum. When this got well alight a large warehouse containing some hundreds of tons of wood pulp caught fire and it blazed furiously, despite the efforts of fire-fighters and soldiers. Ships in the harbor had also to be towed to a place of safety. The damage done is estimated at £250,000. A large quantity of newsprint, waiting to be delivered from the docks, was also destroyed.

Alarms — Pulp Shortage.

The Scandinavians are circulating all sorts of rumore about pulp in the future and some of the alarmist in England are taking up the hue and cry. At this season of the year one always hears this story of shortage in pulp circles and it generally results after a little reckoning-up in Sweden and Norway. The bogey is out again this year—as if Scandinavia was the only place on God's earth where pulp is produced. The bogey is a hardy animal—but it is getting whiskers on it now.

For the information of Scandinavians it should be again stated that contracts for 1,000,000 tons of groundwood and 600,000 of sulphite have been fixed up by Messrs. Becker with their Canadian friends. "This big Canadian business," says Sir Fred. Becker, "is the direct outcome of the Empire Press Conference held in Ottawa. That conference started the idea of developing the internal resources of the Empire and it is the great Canadian connections that were then established which have enabled British newspapers, publishers, and paper consumers generally to throw off the domination of Scandinavian manufacturers."

Since this statement was published the alarmists in England and those pushing Scandinavian interests, trot out their bogey of shortages, for the purpose of creating an artificial position. It is wrong! Buyers know it is wrong, particularly when the bogey appears at the same time with the news that one substantial firm of pulp producers enter into contracts covering the next ten years. One would like to know the exact size of forests available for pulpwood in Scandinavia, Finland, Germany, Russia, and other Continental places. If it was possible to ascertain the correct acreage and their supplies of pulp wood cut (and ready in stock) the position would be interesting. When these figures are obtainable it is time to worry. But there is no use estimating a shortage on other people's estimations, with disappointments behind them.

So far as can be ascertained the pulp markets, at the time I write, are firm all around and prices are unchanged. Again, "Affarsvarlden" says that recent sales were effected at low prices of "some old consignments which were lying in Preston and other ports and which sellers were anxious to liquidate in order to avoid further expense." One wonders if there are any more of these "old consignments" lying about England, or Scotland, going at prices for the sake of taking the pulp away. And this is what is called "business"—in the midst of the bogey about shortages.

The Making of Paper Containers

I have just read a volume on "The Manufacture of Paper Containers" price 10s. 6d., by P. E. Verstone, (Verstone & Co, publishers). It is an interesting production—a text book of 200 pages which enables one to propound(1) What are papercontainers? (2) What are paper bottles? (3) What is a paper-container factory, and how should it be organised? And so on.

Mr. Verstone dips into history in his volume. He says: "As for paper bags the earliest types were merely a slight improvement on the ordinary paper coverings used by shopkeepers whenever powdered or granular articles, such as sugar, or tea were sold. It was then found more suitable to twist a piece of paper into a cone and the thin straw-colored paper adopted for this purpose was the forerunner of the wrapping paper now in common use. Following the twisted paper in a descending scale of height. The bottom of the trough is slightly inclined towards the side to facilitate cleaning. Means are provided for easily and quickly flushing the apparatus. When one side requires cleaning the stock is diverted into the other side, so that the operation of the apparatus is not interfered with. —A.P.-C.

G-6, K-11. Pulp Screen. A. J. HAUG assignor to SHERBROOKE MACHINERY CO. Can. patent 219,144, May 30, 1922. A (preferably octagonal) screening drum rotates within a circular casing. The feeling device is so constructed as to act in conjunction with the rotation of the drum to positively drive the stock through the drum and subject it repeatedly to the screening action.—A.P.-C.

G-6, K-11. Rotary Pulp Screen. C. H. JOHNSSON. Can. patent 220,027, June 27, 1922. A screening drum having a polygonal or otherwise irregular cross section rotates in a vat which may also have either a polygonal or irregular cross-section. This causes the pulp to be alternately sucked on or pressed back from the drum facilitating the screening operation. A suitable spray is provided for washing away the tailings. (Evidently similar to the Spangenberg System.—Ed.)—A. P. C.

G-6, K-11. Pulp Screen. H. T. BAKER and J. D. HASKELL. Can patent 217,879, April 25, 1922. The stock is fed inside a cylindrical screen rotating in a casing of approximately elliptic cross section. On the outside of the rotor are blades, between each pair of which is a trough-shaped frame divided into sections by curved partitions. The stock, after having passed the screen is carried around by the rotor as it passes the minor axes of the elliptical shell. There is but a small clearance between the rotor and the shell at this point, and the stock is compressed and has a tendency to flow inward, thus dislodging oversize fibers and dirt that tend to clog the screen plates.—A.P.-C.

G-8. Stripping Means for the Press Rolls of Wet Machines. H. HINCKLEY. Can. patent 219 279, June 6, 1922. According to Tidmarsh's U. S. A. patent 1,387,954 (and Can. patent 219,484), (See this journal, xx, 655, August 3, 1922.) the pulp sheets are passed through final corrugated press rolls unsupported by the felt. As the pressure is increased beyond a certain point, the pulp is forced within the corrugations of the rolls, passes the edge of the doctor until finally the doctor is forced out of position and part or all of tthe sheet follows the roll. According to this invention this is prevented by providing the upper press with a number of narrow circumferential grooves. A series of narrow (about one-eight inch) belts run loosely in these grooves and around an idler roll in front of the press roll. As the sheet emerges from the nip of the rolls, it is forced forward by the guide belts.—A.P.-C.

G-8. Cutter for Wet Machine. H. A. CONSTANTINE. Can. patent 218,766, May 23, 1922. A guide or track, equipped with a carriage to which is attached a sharpened cutting point, is placed in front of the upper roll of the wet machine at a slight angle to the horizontal, so that the cut will be square across the sheet of pulp. When the pulp has reached a predetermined thickness, the cutter is rapidly driven across the face of the roll, and is slowly brought back to its initial position, so that by the time it has returned the pulp is again ready to be cut. Means are provided for gripping the edge of the sheet of pulp as soon as cut, moving it away from the machine and allowing it to fall at a predetermined point where the sheets are piled up. The device can be attached to existing machines. —A.P.-C.

G-10. Machine for Making Wire Mats for Pressing Lapped Pulp. J. O. HAMEL. Can. patent 221,798, Aug. 1, 1922.—A.P.-C.

H. — Bleaching, Bleach Manufacturing, and Equipment

H-4. Electrolyte for Bleach Making. A. H. HOOKER assignor to HOOKER ELECTRO-CHEMICAL CO. Can. patent 221,428, July 25, 1922. The electrolyte consists of a brine solution containing sufficient solid sodium chloride to maintain the brine within the cell in a condition of complete saturation at the operating temperature. Excess of salt must be avoided as it would clog the diaphragm.—A.P.-C.

H-4. Maufacture of Sodium Hypochlorite. J. R. MacMILLAN, assignor to NIAGARA ALKALI CO. Can. patent 218,958, May 23, 1922. Chlorine is led into a cold mixture of milk of lime and sodium carbonate solution which is kept agitated. The chlorine is led in at a moderate rate so that not much heat is generated and the reaction is readily controlled, and there is little or no production of by-products. Introduction of chlorine is best stopped when the alkalinity has dropped to about 5% so as to give stability to the solution. The chlorinated liquor is allowed to stand, and the clear liquid is decanted.—A.P.-C.

H-4. Electrolytic Cell. J. CRANSTON and W. D. LE BAR. Can. patent 217,414, April 4, 1922. The body of the cell is made of slate, concrete, or stone. A portion of each side of the body is cut away and against the cut-away portion a diaphragm is placed, the diaphragm being backed by a perforated metallic sheet serving as cathode. The latter at its lower end is bent upwards and outwards to form a trough for collecting the alkaline cell effluent. The sides of the upper portion of the body of the cell reach down far enough into the electrolyte to form a partition or sealing wall between the anode and cathode chambers, so that the gas formed in the anode chamber is kept separate. The anodes (preferably graphite) are mounted in sets through corresponding slots in the top of the body. They may be removed together and reserved relative to the cathodes, so that when a set of anodes has become eaten away to such an extent as to impair its efficiency it may be taken out and turned around to present a new face to the cathode. A sheet of metal hangs from the top of the body into the trough at the bottom of the cathode to provide a sealed chamber for drawing off the hydrogen. —A.P.-C.

H-5. Process of Bleaching Vegetable Fibers. G. G. TAYLOR, assignor to AMERICAN WRITING PAPER CO. Can. patent 217,811, April 18, 1922. Boric acid in less than the equimolecular proportions to the hypochlorite present (preferably 1 lb. per 100 lb. of stock), is added to the bleaching bath. The boric acid liberates hypochlorus acid and forms a borate, which is reconverted into boric acid by the action of the hydrochloric acid formed by decomposition of the hypochlorus acid, according to the equations $NaOCl + H_3BO_3 = NaBO_2 + HOCl + H_2O$; $2HOCl = 2HCl + O_2$; $HCl + NaBO_2 + H_2 = NaCl + H_3BO_3$. —A.P.-C.

K. — Paper Manufacturing and Equipment

K-7. Automatic Continuous Mixing System for Paper Stock. C. H. ALLEN, E. J. TRIMBEY, and GREAT NORTHERN PAPER CO. Can. patent 219,561, June 13, 1922. Re-issue of Can. patent 212,476, July 12, 1921. See this journal xix, 357, March 31, 1921—A.P.-C.

K-7. Beating Engine. Can. patent No. 212,898, ERNST MAHLER, Neenah Wis., U. S. A., Aug. 9, 1921. (See **"Characteristics of the Niagara Beater," Pulp and Paper,** xix, 723, K-7, July 7, 1921.)—A.P.-C.

K-7. Process for Preparing Paper Making Stock. Can. patent No. 212,476, C. H. ALLEN and E. J. TRIMBLY and THE GREAT NORTHERN PAPER CO., assignee of a interest, all of Millinocket, Me., U. S. A., July 12, 1921. The various paper making ingredients are made into fluid mixtures or solutions, and the fluid mixtures so prepared are poured into a common stream and the volumes delivered by the individual streams are proportioned to cause their union into a common stream of the desired composition for the paper machine. (See also **Pulp and Paper**, xix, 357, K-7, March 31, 1921.)—A.P.-C.

K-10, K-23. Adhesive, Waterproof and Sizing Compositions. A. E. CRAVER. Can patent 217,598, April 11, 1922. To a solution of a protein (e.g., casein) is added a substance capable of liberating formaldehyde on heating (e.g., sodium formaldehyde sulphoxylate, $H_2COHOSONa$, or formaldehyde sodium bisulphite, $H_2COHOSO_2Na$). Oxidizing agents may be added to aid the liberation of formaldehyde. The ingredients may be compounded dry and then mixed with a suitable solvent.—A.P.-C.

K-10. Method of Making Emulsions. J. A. DE CEW, assignor to PROCESS ENGINEERS LTD. Can. patent 218,270, May 2, 1922. The substance to be emulsified is brought into contact with an alkaline solution under pressure in an atomizer at about 180°F, the amount of alkali being insufficient to produce complete saponification. The emulsion is then cooled by mixing with cold water. The process is suitable for the preparation of sizing "solutions".—A.P.-C.

K-11. Paper Machine Screen. J. A. BYSTROM. Can. patent 220,206, June 27, 1922. A suitable vertical screen (about one-eight inch mesh) is provided between the pulp box and head box to prevent any lumps of pulp being discharged into the latter.—A.P.-C.

K-11. Flat Suction Box. Can. patent No. 212,893, ROBERT J. MARK, London, England, assignee of JACOB HEES, Ebersheim, Rhenish Palatinate, Germany, Aug. 9, 1921. The boxes are arranged side by side without any interval between adjacent boxes. (Same as Fr. patent No. 511,466. See this journal xix, 888, K-12, Aug. 25, 1921. See also "**Effects of the Arrangement of the Suction Boxes on the Life of Fourdrinier Wires**", in **Paper Trade J.**, lxxiii, No. 19, 80, 82, Nov. 10, 1921.)—A.P.-C.

K-11. Method of Cleaning Paper Machine Felts. Can. patent No. 213, 564, GEO. K. WALKER, Glens Falls, N. Y., U. S. A., Sept. 27, 1921. A cleansing liquid is applied to one side of the left to loosen the foreign material thereon, and then suction is applied to the same side of the felt to open the meshes and remove the liquid and foreign material.—A.P.-C.

K-11. Elongation and Shrinkage of Paper on the Paper Machine. A. VANDER STICHEL. **Papeterie**, xlii, 270 (March 25, 1920); **Pulp and Paper**, xix, 834, (Aug. 11, 1921). Translation by A. Papineau-Couture. See **Pulp and Paper**, xviii, 756, (July 7, 1920).—A.P.-C.

K-12. Dandy Roll. H. ALBRO. Can. patent 220,878, July 18, 1922. The cylinder mold is constructed so as to be diametrically expansible and contractible so that an indefinite number of outer watermarking gauzes employed on a single mold.—A.P.-C.

K-12, K-23. Watermarking Devices for Crepe Paper. F. P. KLUND, assignor to HAMMERMILL PAPER CO. Can. patent 217,865, April 18, 1922. In watermarking crepe paper, if the watermarking roll were provided with annular rings to ensure rotation, as is done on smooth surfaced papers, the surface of the sheet in contact with these rings would be flattened. According to the invention supporting devices of suitable ornamental design are placed in the spaces between the marking devices, so as to provide a bearing surface for the roll between the watermarks proper.—A.P.-C.

K-20. Process for the Manufacture of Parchment Paper. Can patent No. 194,344, WALTER DAGNALL, Hampton Wick, Middlesex, England, Dec. 2, 1919. Same as Eng. patent No. 123, 594 and Fr. patent No. 495,742. See this journal xix, 253, K-20, (March 3, 1921).-A.P.-C.

L — Products of Paper and Pulp

L-7. Notes on Textilose. PAUL FRANCIS. **Monit. Papeterie Française**, lii, 649-650, (Oct. 15, 1921). The author briefly reviews the development and present status of the textilose industry and concludes that though there were many failures, due to textilose being put to many uses for which it was not suitable, this material has a very legitimate outlet for certain articles which do not require to be washed, such as bagging, carpets, hangings, etc.—A.P.-C.

L-7. Preparation of Textile Threads from Wood. Papeterie, xlii, 1106-1113, (Dec. 25, 1920); xliii, 9-13, (Jan. 10, 1921); 50-54, (Jan. 25, 1921); **Paper**, xxviii, No. 12, 28-31, 40, (May 25, 1921); Translation by A. Papineau-Couture. See this journal xix, 770, L-7, (July 21, 1921).—A.P.-C.

The Determination of Beta — and Gamma — Cellulose. Paper, xxviii, No. 15, 21-22, (June 15, 1921). Translation by Clarence Jay West. The determination of the hemi-celluloses (beta — and gamma — cellulose) in the alkaline filtrates from the determination of alpha-cellulose (See this journal xix, 1148, A-4, A-5, Nov. 10, 1921) is based on the oxidation of the cellulose ($C_6H_{10}O_5 + 6O_2 = 6CO_2 + 5H_2O$) and titration of the excess of oxidizing agent, the usual one being potassium bichromate. Hydrogen peroxide and hypochlorite were tried but were found totally unsuitable for the purpose.—A.P.-C.

A-0, R-11. Outline of Laboratory Tests in Connection with Pulp and Paper Making. A. LECHATELIER. **Chimie et Industrie**, iv, 529-542 (Oct. 1920); **Paper**, xxviii, No. 8, 17-21 (April 27, 1921). Translation by A. Papineau-Couture. See **Pulp and Paper**, xix, 21, K-6, Jan. 6, 1921.—A.P.-C.

NEW WATERPROOFING PROCESS FOR PAPER

By SHANTO SWARUPA BHATNAGAR. **JOUR. Phys Chem. XXVI. (1922). Abs. in China Clay Tr. Rev. July, 1922.**

For the same concentration of solution irrespective of the solvent the order of efficiency of various salts for waterproofing paper was oleate of copper, oleate of magnesia, linoleate of copper, linoleate of magnesia, oleate of nickel, linoleate of nickel, oleate of zinc, linoleate of zinc, oleate of aluminium and oleate of lead. The absorption of these salts is greatest in the first hour and reaches a state of equilibrium in two hours. The amount of adsorption increases with the concentration of the solution used. It is shown that Freundlich's empirical rule holds good in several cases. If a proper soap solution and a suitable paper pulp are selected the rather expensive method of making the fibre waterproof by giving a thin coating of the waterproof material by a brush can be replaced by the adsorption process. The defects of the crack-formation are obviated in this process.

A man is said to be old when he thinks the girls are getting prettier and the climate is changing.

TORONTO TRADE TOPICS

Business progress is upward but still subject to very conservative buying by retailers. It is evident that many are waiting for actual harvest returns before making commitments for late Fall and Winter. One house reporting a good volume of Fall orders says that nearly two thirds of the deliveries are for late September and October.

Wholesalers are a little disappointed at the volume of business developed in connection with the Canadian National Exhibition, just closed with an attendance beating all records by a large margin.

The aggregate of business transacted during the Exhibition period will be greater than 1921, but it was hoped that a broader buying tendency would have been in evidence.

There is some surprise manifested at the lack of interest taken in this important exhibition by pulp and paper industries both as exhibitors and buyers. The machinery and power exhibits being specialized and showing many novel features.

Apart from office specialities only two manufacturers were represented.

Local pulp and paper market is characterized by very active conditions in paper stocks especially the grades used in bonds. The United States demand is strong and stocks can be sold for export at prices that are considered too high for profitable business by Canadian paperboard mills. These are being cared for to some extent but the supply is limited. Quotations have, therefore, been withdrawn temporarily, by board mills.

In view of the strong pulp situation, it would not be surprising if prices of most of the lines using natural or bleached sulphite, were to experience advanced prices ere long.

Market Notes.

Pulps continue to show firmer tendency and quotations are slightly higher for book grades of bleached and unbleached sulphite.

Groundwood Delivered, runs $30 to $40.

Sulphite Book grade $67.50 delivered; News, around $60; and bleached $90 to $95.

Bonds and Writing Evidence of better buying conditions is apparent.

Bristols, Covers and tags Are experiencing active demand. Manufacturers' prices not changed.

Box Board. Very active. Quotations are withdrawn, owing to high price of raw materials, especially waste papers.

Book Fair activity without price change.

Coated paper Somewhat improved domestic demand. Export business good.

Wrappings Jobbers report slight improvement.

No. 1 Kraft, 8.15c; B. Manila, 5½c; No.1 Manila, 7c; Fibre Manila, 7c; T. Manila, 5¼c.

Bags. Light demand but improving.

Light manila (100 M lots), less 62½—7½—5%; Heavy Manila (100 M lots), less 60%; Light kraft (100 M lots), less 60—7½%; Heavy kraft (100 M lots), less 50—10%;

Tissues and Toilets Mills are active and jobbers experience fair demand.

No. 1 Manila, 20 x 30, .80; 24 x 36, 1.05. Natural White, 20 x 30, .90; 24 x 36, 1.25. No. 1 White, 20 x 30, 1.10; 24 x 36, 1.55.

Paper Stocks. Market is firm all round, strong demand from boxboard mills for news, mixed, and miscellaneous. U. S. mills are buying freely and supply not large. Tendency to advance in all lines.

No. 1 Hard White Shavings, 3.75; No. 1 Soft White Shavings, 3.65; Heavy Books & Magazines, 2.25; Ledgers and Writings, 2.50; No. 1 Kraft, 2.25; Newspapers, 1.15; No. 1 Mixed Papers, .90; No. 1 Miscellaneous, .85; No. 2 Miscellaneous, 1.05.

New Cotton Cuttings No. 1 White Shirt Cuttings, 11¼-11½; Fancy Shirt Cuttings, 6-6½; Canton Flannels Bleached, 8-8½; White Lawns, 8-8½; Blue Overall Cuttings, 5½-6.

Ropes and Bagging. No. 1 Scrap Bagging, 20.00; No. 1 Manila Rope, 5¾-6.

NEW YORK MARKETS

New York, Sept. 9—(Special Correspondence)—The paper market seems possessed of all the elements of strength. There are indications that the situation is improving from the effects of the railroad and coal strikes, and that business in various kinds of paper has again begun to increase, with the industry as a whole marked by more activity and showing a firmer undertone day by day. Reports from some mill centres in regard to the manufacturing operations of papermaking plants are very gratifying, telling as they do of manufacturers finding it necessary to run their machines at close to maximum capacity to turn out the paper wanted by consumers and jobbers, and of the gradual betterment of paper prices.

Demand for most kinds of paper has reached the point where manufacturers in numerous cases are refusing to quote any prices whatsoever, all quotations having been withdrawn, and mills running against back orders. This situation is largely the result of the coal strike. Demand for paper is not so broad that manufacturers are unable to cope with the requirements of buyers, but shortage of coal in the past few weeks has so curtailed the production of paper that many manufacturers are today declining to accept additional business until having completed back orders and are therefore issuing no prices. In some kinds of paper it is consequently rather difficult to ascertain what market values really are.

Several divisions of the paper industry are exhibiting exceptional activity at present. Box board mills are especially lively. Demand for board is brisk and of broad dimensions, paper box manufacturers buying not only to satisfy increasing requirements but also against anticipated needs later in the year, being induced to look ahead with respect to supplies by the rapid advancement in board prices. It is a fact that most board mills have more business on their books at the moment than they can comfortably accomodate under prevailing circumstances. This means, of course, that mills are prevented from producing at a normal rate of capacity because of a shortage of coal, and most manufacturers are far behind in deliveries, with the result they are refusing to accept further orders and are concentrating their efforts on completing old additional business. One of the New York distributing agents for probably the largest box board mill in the eastern section of the country said yesterday that never in his recollection had he had such a large volume of orders for board in hand as he has at present, and stated that his mill was more than 2,000 tons behind in deliveries in this city alone. This mill, it was said, along with other board plants, is running intermittently, operating a couple of days and then closing down for the same length of time until fresh supplies of coal arrive. The board dealer in question expressed the opinion that the mills of the country would have to run full for an entire month before they could begin to catch up with orders now on file.

Board prices are very firm and further advancement has been noted this week. Plain chip board news board at $62.50, with some sellers asking $65. Most of the transient business done in chip board during the last few days has been at around $57.50, but it is understood that no more tonnage is to be had at this price basis, manufacturers in general having raised their price to $60.

Fine papers are moving in increasing amounts and at steady prices. The situation in book paper is showing more strength and many book paper manufacturers have withdrawn prices. Coarse papers are fairly active and at steady quotations. The newsprint market is firm and no let up in the movement of print paper can be noted.

GROUND WOOD— A firm tone prevails in the mechanical pulp market and prices exhibit a hardening tendency. Demand is good and growing, with newsprint and box board mills leading in buying, and producers are reported in numerous cases asking higher prices. Domestic ground wood is quoted at around $32 a ton f.o.b. producing plants, with substantially higher prices than this heard in some quarters, and it is stated that sellers are guaging their quotations to figure out at close to $40 a ton delivered at consuming centres. Reports say that there is no immediate danger of any shortage of ground wood arising, yet producers view the future in a bullish way and assert that it is quite likely that before the year is out mechanical pulp may be hard to locate in sizeable volume, particularly if consumption keeps up at the present rate. Sellers are consequently practicing care in commiting themselves and do not seem very anxious to accept large orders for forward shipment.

CHEMICAL PULP— Increasing firmness is noted in chemical wood pulp. Demand is steadily though gradually broadening and prices are stiffening, with further slight advances recorded this week. Salesmen traveling through the paper mills report consumers buying freely and add that there is little hesitancy shown about meeting the prices asked so long as they are within reasonable bounds. Sales of No. 1 foreign unbleached sulphite were made this week at $54 a ton on the dock at New York, representing a rise of about $2 a ton, while foreign bleached sulphite is firming with most importers now asking 4.25 cents or just a trifle under this figure for No. 1 sulphite ex dock New York. Kraft pulp is very firm in price and most import houses are quoting 2.60 cents or better on Scandinavian kraft, while domestic No. 1 Kraft is priced at from 2.75 cents upward at pulp mills. Soda pulp also is showing more strength in price and sales are reported at 4 to 4.25 cents a pound f.o.b. producing plants.

RAGS— Activity in roofing stock continues to be the outstanding feature in the papermaking rag market.

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AND

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With the Woodsmen

AEROPLANES TO PLAY BIG PART IN SAVING FORESTS

By Edward Beck, Manager of the Canadian Pulp and Paper Association.

Note:—*Mr. Beck recently made an aerial reconnaissance of portions of the St. Maurice Valley, Quebec, in a Curtis flying boat under the guidance of Forester-Photographer Townsend, of the Laurentide Company, Ltd. The sea-plane, driven by Pilot Wilshire, is owned by the Laurentide Air Services and employed during the summer in patrolling the St. Maurice Valley to detect fires and to make photographic surveys of the Laurentide Company's timber resources. The trip took in the entire region between Lac La Tortue and Lake Clear, the day being especially advantageous from a flying standpoint.*

Competent authorities estimate that 5 to 10 per cent. of the forests in the St. Maurice Valley have been damaged by fire this season, which has been one of the most disastrous ever experienced in that region.

While the statement as to the size of the fire-swept area does not mean that 5 to 10% of the standing timber in the valley has been destroyed, since there is usually a good deal of timber that can be salvaged after every fire, the actual loss is still very considerable, while the potential loss—the destruction of young forests first getting their stride—is still more serious.

The fires, are not confined to the limits of any single company. Practically all those owning or operating limits in the St. Maurice Valley are among the sufferers, some to a greater extent than others. The greatest damage seems to have been done in the Chinne Lakes and Vermillon River districts the newly burnt areas in these districts covering thousands of acres in extent and presenting a bleak and gaunt appearance to the observer from the air. These are not the only places visited by fire this summer, however, as the Upper St.-Maurice has been the scene of more than a score of disastrous burnings.

An official statement given out at Quebec, places the monetary value of the timber destroyed by fire already this year at something like six millions of dollars, being the equivalent of the growth of 600,000 acres. Even these impressive figures fail to bring home the full extent of the disaster, which can only be appreciated by those in intimate touch with the situation or who are responsible for the carrying on of the industries whose existence depends upon a continuous and abundant supply of wood. The recent rainy season has brought a temporary respite from the scourge of fire, but no one knows how soon this may give way to another period of drought and a new time of peril.

Protection Inadequate

Opinions differ as to the origin of this year's fires, but everybody agrees that the present protective means are altogether inadequate. The railways and the settlers, according to those nearest the scene, have started fewer fires this year than formerly. Irresponsible hunters and fishermen are held to blame in many cases, while delberate incendiarism is also charged in some.

The newly promulgated regulations of the Department of Lands and Forests are expected to be of benefit in preventing fires if conscientiously enforced during the hazardous seasons, but practical foresters do not look upon them as at all sufficient.

Experience has brought the conclusion that the only way to safeguard the Quebec forests from destruction by fire is an adequate system of aerial surveillance supported by a sufficient number of fire rangers' camps situated at proper intervals in the woods.

The aerial observer has immense advantages over all others. He can detect a fire at a range of from fifty to sixty miles and can reach it in as many minutes as it would take hours, if not days, by any other mode of conveyance. He has the advantage of being able to circumnavigate the threatened area, discovering instantaneously the fire's direction and locating its most vulnerable approach. Fire rangers on foot or in canoes can see but a small section of a fire at one time. They experience great difficulty in learning its direction. Frequently their efforts, undirected, are rendered futile on this account. Absence of trails hampers their ingress and egress and renders their progress slow and ineffectual, so that as a rule, the rangers' crew approaches its task half heartedly, overwhelmed by the obtacles opposed to its work.

In co-operation with fire-fighting camps established at distances of a hundred miles or so apart, manned with crews of from six to eight men, available at any time to respond to an alarm equipped with suitable fire-fighting appratus, a sea-plane, such as those now in use, (although better machines for the purpose are available), could spot a fire, fly to the nearest camp, return with the men and put them at work before the blaze got well under way, it is claimed. Many fires which might otherwise prove destructive could thus be extinguished in their incipent stages, while others could be kept within relatively restricted areas.

Camps Self-Paying

These camps would not be necessary except during the particularly hazardous seasons which occur in the months of May, June and September. Operated in connection with seaplanes they would, in the opinion of those best fitted to judge, reduce the fire hazards in the Quebec forests to a minimum and pay for their cost many times over every season. In the long run, it is claimed, they would be less expensive even than an adequate system of observation towers and telephones, which are impracticable so far as the St. Maurice Valley is concerned, and infinitely more effective. They offer, in fact, the only real solution of the forest problem as it exists in this province.

The two 'planes in use in the district this summer have given a good acount of themselves, having detected and reported numerous fires in time to bring fire-fighters to the scene. They have also been employed in carrying in supplies to the men when other means were not available. Their usefulness would be increased immeasurably, however, by the maintenance of properly manned fire stations in the woods as already described.

The limit holders in the district and members of the St. Maurice Fire Protective Association have already had the subject up with the Government and the question is being very carefully enquired into. There is some reluctance upon the part of some of the limit-holders to increase the outlay they are already being put to for fire protection. There is also a serious question involved over wether the Government or private interests should take the initiative and assume the responsibility for establishing and operating the system on an adequate and proper basis. No serious doubt seems to be entertained, however, as to its effectiveness. Nor is there much question that if things are allowed to g on as they have been in the past, Quebec, like other onc equally wellfavored wooded states, is eventually going to find itself practically denuded of merchantable timber, and that the industries dependent upon a constant supply of wood, which now contribute so large a share to the prosperity of the province, will have to do what similar industries have had to do elsewhere—go out of business. If anyone is at all doubtful about this, an aerial observation of just what the eight weeks' dry season this spring has done to the St. Maurice Valley will prove absolutely convincing.

In my opinion, further procrastination upon the part of the provincial authorities and the limit-holders over this problem and their failure to get together on a programme of practical fire protection will be most short-sighted and little short of criminal. Last year the Department of Lands and Forests took in over four millions of revenue from timber dues and hydraulic charges in this province. It could well afford to spend one-half that amount although no such sum would be necessary, in providing adequate protection from what up to date has proven the province's one great revenue producing natural asset. Such an expenditure would be justified even if looked upon merely as a fire insurance premium.

LAURENTIDE IN SPLENDID SHAPE

Covering as it does the twelve-monthly period ended June 30, 1922, into which space of time were crowded most of the vicissitudes to which the Canadian pulp and paper industry fell heir in the post-war era of business depression, the annual report of the Laurentide company, Limited, embodies features which should bring no little gratification to shareholders. Despite the sharp reduction in profits natural to the period of stagnant markets declining prices and high-priced wood this enterprise met all charges, earned and paid its dividends and had a little something to tuck away after that. In addition it has materially reduced its bank loan and accounts payable, and written down inventories. It is an exhibit reflecting splendid strength.

The statement going forward to shareholders is the second exhibit of the company as at present constituted, covering a full year. It covers the leanest year since the industry attained its present importance and must be compared with the most prosperous year for the industry up to date. Operating profits for the past fiscal year ended June 30, 1922, amounted to $2,266,254, as campared with $5,374,565 the previous year. Miscellaneous profit was down to $94,386 from $1,029,829, while profits from investments were $332,513, as compared with $319,639. The total income of the company was, therefore, $2,693,154, as compared with $6,724,032 the previous year. Interest charges last year amounted to $440,631, as compared with $885,260. The deduction of $458,461 as reserve for depreciation of plant leaves net profits of $1,794,061, or slightly over 6.4 per cent on the stock of the company as against $4,515,928 for 1920-21. Payment of dividends $66,061 to be carried forward to surplus account which now stand at $1,423,467. The surplus for 1920-21 was $787,928 after deduction of $2,000,000 as reserve for reduction of inventories and $1,322,843 as reserve for taxes, depreciation and depletion.

Outstanding among the current assets is the reduction in inventories from $8,392,812 to $,771,436. Accounts receivable at $756,045 are less by over half a million, while mill supplies at $652,835 are down about $300,000.

Perhaps the most striking feature of the balance sheet is the reduction of the bank loan from $5,067,945 to $3,572,960. Bills and accounts payable are down to $657,347 from $1,301,370. Tax reserve of $573,559 is down from $1,095,918, indicating the payment of a half million on this account.

The working capital position of the company for the past two years compares as follows:

	June 30, 1922.	June 30, 1921.
Curr. assets	$11,296,891	$15,958,254
Curr. liabilities	5,792,764	8,475,633
Work. cap.	$5,504,127	$7,482,621

In his remarks to shareholder President Chahoon says:

"In the last annual state a reserve of $2,000,000 was created to cover posible depreciation inventories. It was deemed advisable to write this amount from logs and other supplies in order to place these inventories on a conservative replacement value basis. Of this amount $535,000 was consumed on materials used during the fiscal year.

"General conditions in the newsprint industry are decidedly better than at the time of our last report. Prices have held consistently throughout the year, and demand has increased sufficiently to absorb the new production that was brought in during the year.

"Your directors feel gratified that the company's strength enabled them to go through this most trying readjustment period with so little inconvenience either to the organization or the shareholders."

"MILDEW" IN PAPER MAKERS' FELTS

From the research laboratory of the F. C. Huyck and Sons mills at Albany, N.Y., it is reported that after a careful investigation it has been determined that while "mildew" in paper makers' felts is not curable it is preventable. It has been found that the bacteria spores, the activity of which results in so-called "mildew," revel in moisture, but, while not destroyed, are inactive in the presence of dryness and heat. Thus the solution of how to keep felts free from "mildew" is to see that they are always stored where there is an absence of moisture and where a moderate temperature prevails. The spores show very little activity in a temperature of from 50 deg. F. to 98 deg. F., even if there be a trace of moisture, but they develop rapidly at a temperature above 98 deg. F., if there is humidity. Hence the exercise of care in storage will, to a large degree if not entirely, eliminate "rust" or "mildew" in felts.

TO BURN PULPWOOD BARK

Toronto, August 31. —The prospective coal shortage threw its shadow before it, at Osgoode Hall this morning, but in a statement presented to the court it may have a silver lining as far as one industry is concerned. G. T. Clarkson, receiver of the Mattagami Pulp and Paper Company, asked authority from Justice Mowat to instal new grates in the mills at Smooth Rock Falls. In view of the coal shortage, it was said, it was necessary to use some other fuel, and it was found that a new style of grate would enable the mills to burn the bark from the pulpwood that had hitherto been wasted. The grates would pay for themselves.

Justice Mowat gave authority for the new installations to be made. The debenture holders consented to the application.

To Holders of Five Year 5½ per cent Canada's Victory Bonds

Issued in 1917 and Maturing 1st December, 1922.

CONVERSION PROPOSALS

THE MINISTER OF FINANCE offers to holders of these bonds who desire to continue their investment in Dominion of Canada securities the privilege of exchanging the maturing bonds for new bonds bearing 5½ per cent interest, payable half yearly, of either of the following classes:—

(a) Five year bonds, dated 1st November, 1922, to mature 1st November, 1927.

(b) Ten year bonds, dated 1st November, 1922, to mature 1st November, 1932.

While the maturing bonds will carry interest to 1st December, 1922, the new bonds will commence to earn interest from 1st November, 1922, GIVING A BONUS OF A FULL MONTH'S INTEREST TO THOSE AVAILING THEMSELVES OF THE CONVERSION PRIVILEGE.

This offer is made to holders of the maturing bonds and is not open to other investors. The bonds to be issued under this proposal will be substantially of the same character as those which are maturing, except that the exemption from taxation does not apply to the new issue.

Holders of the maturing bonds who wish to avail themselves of this conversion privilege should take their bonds AS EARLY AS POSSIBLE, BUT NOT LATER THAN SEPTEMBER 30th, to a Branch of any Chartered Bank in Canada and receive in exchange an official receipt for the bonds surrendered, containing an undertaking to deliver the corresponding bonds of the new issue.

Holders of maturing fully registered bonds, interest payable by cheque from Ottawa, will receive their December 1 interest cheque as usual. Holders of coupon bonds will detach and retain the last unmatured coupon before surrendering the bond itself for conversion purposes.

The surrendered bonds will be forwarded by banks to the Minister of Finance at Ottawa, where they will be exchanged for bonds of the new issue, in fully registered, or coupon registered or coupon bearer form carrying interest payable 1st May and 1st November of each year of the duration of the loan, the first interest payment accruing and payable 1st May, 1923. Bonds of the new issue will be sent to the banks for delivery immediately after the receipt of the surrendered bonds.

The bonds of the maturing issue which are not converted under this proposal will be paid off in cash on the 1st December, 1922.

W. S. FIELDING,
Minister of Finance.

Dated at Ottawa, 8th August, 1922.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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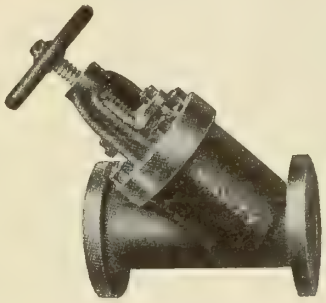

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-:- EDITORIAL -:-

RICHARD B. ANGUS

Most of the 92 well filled years of the life of Richard B. Angus were spent in the building up of Canadian industries. Probably no one person has contributed more broadly and effectively to Canada's well being. Mr. Angus was most prominently identified with the financial and railroad affairs of the Dominion through his long years of devoted service to the Bank of Montreal and the Canadian Pacific Railway. Although there is one case on record of the transportation and ingrafting of a man's rib, we have, in the life of Mr. Angus, an example of a man's backbone grafted into two of Canada's largest—probably the two largest, corporations. He imparted stability and strength to all his works. His energy, foresight, and courage have been largely responsible for Canada's present industrial position.

While Mr. Angus contributed indirectly to the welfare of the pulp and paper industry through his positions of leadership in banking and railroad circles, his death will be felt and regretted the more keenly because of his direct connection as a director of the Laurentide Company. The resolutions passed by his fellow directors are but a feeble expression of the loss that the industry as a whole has suffered.

In rural parlance, Mr. Angus was a neighbor of ours. His summer residence at Senneville is one of the most beautiful spots on the Island of Montreal. He will be missed by many commuters, among whom he moved and rubbed elbows in his genial but dignified manner. His years were many and full of honors and accomplishment for good. He has gone to his rest and his good works will live after him, to help and inspire many to better things.

SOWING IN GOOD SOIL

We are in receipt of sample covers for school scribblers being put out to the stationery trade by Messrs. Warwick Bros. and Rutter, of Toronto.

These have on the front various well printed illustrations in two and three color half tone work, and on the back descriptive matter of informing character, or intended to create interest in subjects like forest fire prevention, protection of animals, etc.

One shows a moonlight forest scene with tent and camp fire. On the back is the headline, "See that your fire is out," followed by a well written allegory of a forest fire.

Another shows varieties of nuts, including one steel nut, and on the back there is a description of the familiar, walnut, peanut, etc., and at the end, the Ford nut is defined.

The school scribbler is a field of great potential usefulness and the publisher, whose name does not appear, is to be congratulated on the idea of combining increased saleability with information and conservation.

COAL AND THE PUBLIC

Canadians seem assured of both fires and railroad services during the coming winter. Soft coal may have to be largely used instead of anthracite in the household, and coal of either kind is practically certain to be unduly inflated in price. But those who have the money will be able to keep warm—at a price. That is about all the consolation to be got out of the situation into which, from various causes, this country has been suffered to drift. A poor consolation, it is true, but yet better than none at all.

Nor is the ordinary householder likely to be afforded much relief in the reasonably near future. Indeed, coal seems likely to remain at an inordinately high price for a period of almost indefinite length. In a country with a climate like Canada, coal is always a very formidable item in the family budget, and, if it is to cost the consumer an extortionate price, it is manifest that we are up against a very serious obstacle to the much-to-be-desired reduction in the high cost of living.

Why, the average citizen will naturally ask, are exorbitant prices to be paid for coal? Unpalatable as the answer may be to some, we believe that it is but the truth to reply that it is because the public are being held up. Alike in Alberta and British Columbia and in Nova Scotia, the industrial peace that has been declared is really no peace—or, perhaps, it would be more accurate to say that it is a peace that has been purchased at the expense of the public. The miners are to continue to receive wages out of proportion to their services. The mine operators, declining to run their mines at a loss, and apparently willing to purchase almost any sort of peace at almost any sort of price—so long as that price does not come out of their own pockets—will, no doubt, nobly decide to pass on to the public the bill necessitated by their large-hearted generosity to their employees. Indeed, the very fact that the terms of the Nova Scotia settlement include the concession of a long-term agreement to the miners effectually precludes the possibility of any really satisfactory diminution in the price of Nova Scotia coal for the period during which their long-term agreement will remain in force. The miners and the operators, whether in the East or in the West of Canada, have come to terms with precious little regard for the interests of the public — that public whose interest in the matter they apparently conceive to be confined to consuming coal and paying for it, no matter what the cost.

Sooner or later, there will have to be a showdown. The day of reckoning has been postponed, but it cannot be averted. Neither employers nor employees, nor both in combination, can continue forever to thwart economic laws with impunity. In Great Britain, where they have more fully developed the enviable faculty of seeing an industrial situation steadily and seeing it whole, the public at large recognized that, coal being the basis of the whole industrial system, the miners could not be permitted, by concession to demands out of all proportion to the services rendered, to hold up that system. Hence the public put themselves behind the British industrial leaders in the latter's determination to put right what was wrong. During the recent troubles in our coal-fields, the Canadian public did not see the situation so clearly in black and white, and, indeed, from one reason and another, the situation itself was possibly somewhat more obscure in this country than in Great Britain. At any rate, the great body of the Canadian general public evincing so little overt concern as to the nature of their real interest in the disputes in the mines, the miners and the operators have come to terms with little regard for the public. What has taken place in the coal industry in Great Britain will yet have to take place here. But, for some time to come, the average citizen will have to bear an excessive burden.

A GRATIFYING RESPONSE THUS FAR

It is satisfactory to learn that returns received to date by the Department of Finance indicate a very general acceptance of the Minister's offer to convert 1922 Victory Bonds, maturing the 1st December next, into new bonds bearing 5½ per cent. interest and running for a further period of five or ten years as desired. In fact, many holders of these 1922 Victory Bonds would like to take up considerably more of the new bonds than they hold of the maturing issue. This, however, is not permitted, as cash subscriptions are not being invited at this time. But it may be pointed out that it is, of course, open for such persons to add to their holdings of 1922 bonds by purchasing them in the market, or from other holders who require the cash, and then to surrender them for new bonds. As a fact, it is known that this course is being followed.

The present holders of the 1922 issue have until the 30th instant to decide their course of action. But it would be well for those who wish to avail themselves of the offer of the Minister of Finance to surrender their bonds *at once* rather than to delay doing so until nearly the last moment. For the 1922 maturity, when it was issued in 1917, proved a prime favorite with small investors, many of whom were buying bonds for the first time. In consequence of this fact, there are very many thousands of individual holders of these bonds. Hence it would not only be a great help to the bonds and to the Department of Finance, in carrying through the conversion expeditiously, but also a great convenience to the holders themselves, if they would turn their bonds into the banks as speedily as possible. As it is, there are now only eight days remaining in which to do so.

As we said, just now, this 1922 maturity, when it was issued in 1917, was a prime favorite with small investors. It was of the utmost, importance to the country and to the country's *morale* that, in the grim days of war, the high patriotic fervor, which literally swept the Dominion, from the Atlantic to the Pacific, should have resulted in hundreds of thousands of Canadians becoming, for the first time, investors in these Dominion securities. And just as it was of the utmost importance to Canada that these hundreds of thousands of small investors should have subscribed in the first instance, so it is profoundly desirable now — and desirable from a national, not less than from the individual, viewpoint—that their investment should be continued in the way that the Government's conversion offer admits. On all grounds, it would be little short of lamentable if any considerable number of the holders of these maturing bonds should pass over the Minister's offer, with the idea of using the money at maturity either for less sound investments—when there is no sounder security in the world today than that offered by the Dominion Government—or for unnecessary expenditures—at this time when economy is the plain duty of us all, alike as a nation and as individuals.

A BOOK TO GET "STUCK ON"

There used to be a slang expression "to get stuck on," which meant to be very much attached to, or impressed by, a person or product. We have just received a book of samples of non-curling gummed papers made by Samuel Jones and Co., Bridewell Place, London, E.C. 4. It is a surprize to us that such products are possible as are shown in this large volume.

An interesting feature of the book is the introductory chapter, explaining the source of supply and the preparation of the adhesives used. The statement on one of the samples "Fine for stamp-hinges" brought up pleasant memories of our philatelistic endeavors of years ago. We are very happy in being favored with a copy of this book.

A despatch says that the present output the printing presses of Germany is three billion marks daily, but, to meet the *shortage*, the output will soon be seven billion marks daily. What do they mean, "shortage"?

Well, the paper industry may be kept busy.

"In this and like communities, public sentiment is everything. With public sentiment nothing can fail, without it nothing can succeed. Consequently he who moulds public sentiment goes deeper than he who enacts statues or pronounces decisions."

ABRAHAM LINCOLN.

Paper: Its Past, Present and Future

By EDWARD BECK, Secretary-manager, Canadian Pulp and Paper Association

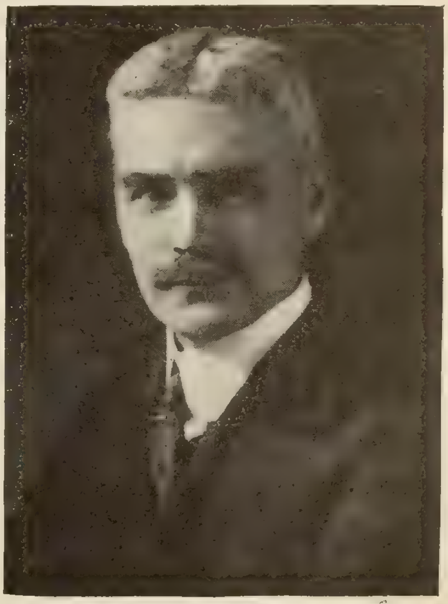
We live in a Paper Age. "Of the making of books," says the sage, "there is no end." You can't make books without paper; and you can't make much of anything else in these days without paper. There is hardly any commodity whose elimination from ordinary daily usage would have so disastrous an effect upon the general well-being as would the elimination of every form of paper. Food and fuel we must have to sustain life; shelter and clothing, too, are essential. But, after these, what thing is in such universal demand as Paper?

Stop a moment to consider the innumerable points at which paper enters as an essential requirement of life and you will be amazed. A scrap of paper, we are told, or its violation, started the Great War. A scrap of paper called a Peace Agreement, brought the war to a close. At present Peace again hangs in the balance and the solvency of Central Europe is threatened largely because of the mass of paper currency with which the defeated countries are trying to carry on.

In our domestic affairs we cannot begin to enumerate the uses of Paper. We are not legally alive until our birth is registered on paper; we can't be married without a paper license, nor buried without a paper death certificate. Even after we are dead the disposition of our estate depends upon a sheet of paper. It is a question if, when we arrive at our final destination, we may not be confronted with a demand for a paper ticket before being admitted, although some of us, perhaps, as a matter of precaution, would do well to provide ourselves with one written on asbestos.

Every new departure, or fresh discovery or modern invention makes added demands upon the Paper Mill, as witness the exploitation, through the use of newsprint, of the radiophone. Or take the subject of prohibition as an illustration. Has anyone ever stopped to consider to what extent the use of paper has been stimulated by the Volstead Act — the thousands of tons consumed in debating its virtues and in recording the activities of its violators and of the enforcement officers? According to what we read it would require the output of a fair-sized mill to supply the paper required for arrest warrants alone. Last week the Literary Digest stated that no less than 40,000,000 pieces of paper had been used in conducting its plebecite on prohibition. In our part of the world, on the other hand, the wrapping mills are working overtime to supply the Quebec Liquor Commission with paper containers for their millions of packages of bottled wares.

A colleague of mine in Montreal recently published a little book designed to bring home to the people who read it the vast importance of the part played by Paper in every phase of life. In this book he imagines that a destructive gas has been invented whose sole property, when let loose in the world, is to corrode cellulose fibres. It destroys completely every bit of paper with which its fumes come in contact. Books and newspapers easily fall a prey to its devouring power and the world is left with nothing to read. History is forgotten. Paper money shrivels, turns into dust and blows away. Notes, mortgages, deeds, bonds, stock certificates, bank ledgers disappear in a puff of smoke-like powder. All business stops The tax-collector is put out of action, which may not be an unmixed evil. Photographs disappear and we can only conjecture what our forebears looked like. Schools and colleges close their doors and the making of scholars ceases. The churches continue to carry on, but under great difficulties because they no longer have the Written Word for their supreme guidance. Paper-mills, of course, shut down, their employee swelling the fast-growing ranks of the idle. Art and music suffer as the works of the masters are obliterated. Food shops become a hopeless jumble, owing to the sudden disintegration of the paper packages. The telephone is rendered useless because of the destruction of the paper used in its insulating material. The post-office shuts up shop, as writing joins the lost arts. The railways and street cars stop running, there being no tickets or transfers or records of any kind. The stock exchanges and the banks close. All insurance—life, fire and accident—is instantly obliterated on account of the destruction of policies and records. Private homes are wrecked when the all decouring gas consumes the protective building paper and destroys the decorative wall hangings. What finally happens is left to conjecture because the author, having deprived the world of paper, wakes up before the ultimate results of his malevolence are realized. The book demonstrates, however, that paper is indispensible; that it touches practically every activity in which we engage; that existence without it is almost inconceivable.



MR. EDWARD BECK

"Paper: Its Past, Present and Future" is a broad subject. To cover it fully would tax both our energies and our patience. Various stories are told of the origin of paper. The Chinese and the ancient Egyptians are both credited with its invention. Japan has been making paper by hand for centuries and is following the original process today. Some authorities ascribe to the common wasp the honor of being the original paper-maker and comparison of the texture of the wasp's nest with that of the finest grades of paper lends color to the contention. Paper, as we know it, has been in use for over 800 years. Before that parchments and beaten skins and before that tablets of stone were employed to convey the written word.

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* Address at meeting of the Groveton Men's Club, Groveton, N. H., Sept. 14, 1922.

In the early days of the paper industry cotton, hemp, and linen were the principal raw materials used. Reaumer, a German chemist, is said to have suggested the use of wood fibre as a paper making material in 1719, but it was not until 1840 that the first paper from ground-wood was produced in Germany by Kellar. There are other claimants, some nearer at home, for the honor of the discovery of groundwood as a basis for paper making. Among them, Chas. Fenerty, who is said to have converted spruce into paper in Nova Scotia in 1838, and John Thomson, a pioneer paper-maker, who is known to have produced groundwood pulp in commercial quantities at Windsor, Que., in 1862. Canadian historians have that the mills at Sherbrooke, Que., owned by Angus Logan & Co., were the first in the world successfully to manufacture paper from woodpulp. That was in 1864. Many interesting stories are told in connection with these early experiments, which, however, there is no time to go into here. The introduction of coniferous wood as the basis of paper making marked the beginning of a new era in the industry, its comparatively low cost and its great abundance soon giving it the premier place among all paper-making materials, which it now enjoys.

The Fourdrinier machine, with which we are all familiar, introduced in the United States in 1827, has also been a dominant factor in developing the paper industry in North America and with it, entitled to equal credit, is the perfecting printing press and the type-setting machine which have resulted in the marvelous expansion of the newspaper business.

Newsprint Paper Appears

Among paper-producing and paper-consuming countries the United States ranks first. It is estimated that the average per capita consumption of paper of all kinds amounts to 120 pounds a year, 40 pounds of which represent newsprint. Newsprint, of which newspapers are made, composed as it is of groundwood and sulphite pulp, was made possible only by the discoveries before alluded to. Cheap newsprint is primarily responsible for the expansion of the American newspaper as we know it today. In no other country, with the possible exception of Canada, is there such a voracious demand for newspapers. More than eleven and a quarter billion copies of daily newspapers, it is estimated are now printed annually in the United States. Something of the immensity of the daily newspaper business and its corresponding bearing upon the paper industry may be gathered from a consideration of the fact that the circulation of the more than 2,000 English-language dailies published in the States exceeds 29,000,000 copies, with Sunday newspapers having a circulation of more than 19,000,000 additional copies. The 60-odd newspapers which have a circulation in excess of 100,000 copies each averaged 23 pages in their daily issues during 1921 and 80 pages in their Sunday issues. During the first seven months of 1922 these papers have averaged 24 pages daily and 87 pages on Sunday. A New York trade paper says that 347 daily newspapers, published in 78 cities, showed a net average daily circulation during the first six months of this year of 33,334,823 copies and that their estimated advertising revenue for the period amounted to $190,000,000 or at the rate of $380,000,000 a year.

To keep these newspapers going requires an immense amount of paper. Consumption of newsprint for some years back, has exceeded two million tons a year. The demand is now greater than at any earlier period, the consumption during the first half of this year amounting to 1,164,616 tons, compared with 979,657 tons in the corresponding months of 1921 and with 1,054,930 tons in 1920, the previous high-water mark.

Coniferous forests are essentially necessary to the maintenance of the paper industry and on the extent and availability of their possession ultimately rests any country's position as an independent paper producer. The United States, Canada, Sweden, Finland, Germany, France, Norway, Great Britain and the Netherlands are the principal paper producing countries of the world. The United States has a forest area of 850,000, square miles, Canada 390,000. Sweden, the next in order, has but 83,000 and so on down the line, until the Netherlands, the last in the list, is reached with 1,000 square miles. It is but fair to say, however, that the Scandinavian countries offset the disadvantage of smaller areas by the employment of intensive forestry methods designed to ensure a perpetual supply of wood.

Despite the fact that it still leads in the extent of its forest areas, the United States is becoming increasingly dependent upon other countries, and particularly upon Canada, for wood, woodpulp and newsprint paper. The explanation is that in the New England, North Atlantic and North Central States, where the American paper industry is centralized, deforestation has proceeded to a point where further industrial expansion becomes impracticable, while much of the remaining forest areas are so remotely situated as to be for the present economically inacessible. Today the United States is importing from 18 to 20 per cent of its requirements of woodpulp, of which Scandinavia supplies about 5 per cent and Canada the rest. It is also importing over 40 per cent of its requirements of newsprint paper, of which the great bulk come from Canada.

American dependence upon Canada's pulpwood supply is further evidenced by the fact that, during the ten year period 1913-1922, an average of 1,124,605 cords of pulpwood a year has been exported from Canada to the United States. In the year ending March 31, 1922, 825,967 cords of wood, 705,306 tons of paper, equivalent to 470,204 additional cords of wood, and 475,743 tons of pulp, equivalent to another 317,162 cords of wood were also exported from Canada to the United States, or the equivalent of a total of 1,613,333 cords of wood in a single year.

Having thus shown the interdependence of the United States and Canada—the one for a supply and the other for a market for pulp and paper products—it may be in order to dwell a little upon the recent growth, the present status and the prospective development of the industry in our country, which many believe is destined to lead the world in the production of pulp, newsprint and some of the coarser papers.

Growth of the Industry in Canada

The history of paper-making in Canada dates from 1803. It is unnecessary here to trace its development which in the earlier years, was slow and uncertain. Forty years ago, there were only five concerns in Canada making pulp and paper. Their total capital amounted to but $92,000. They gave employment to but 68 persons and their annual output was valued at $63,000. Ten years later there were 24 mills, capitalized at $2,900,907, employing 1,025 persons, and turning out products valued at $1,057,810. Progress since that time has been more rapid.

The latest census of the industry shows that there are now 100 mills in operation—40 are pulp mills exclusively, 33 are paper mills, and 27 mills produce both pulp and paper. We have seventeen mills producing newsprint with an annual capacity of about 1,250,000 tons. In the

the first seven months of the current year these mills produced 643,858 tons, a larger amount than was produced in any one year prior to 1917. The output for the remaining five months promises to be relatively greater.

We have now under construction two new newsprint mills—one at Three Rivers, Quebec, and one at Fort William, Ont., each with an estimated capacity of 120 tons a day and which will come into production early next year. The Bathurst Company is starting work on a new 50-ton newsprint mill at Bathurst, N.B. Contracts are reported to have been awarded for the erection of the first unit of a new $13,000,000 pulp and paper plant at Elko, B.C., which will produce 100 tons of newsprint a day, and, when finally completed, 300 tons.

The Brooks-Backus Company have under construction near Kenora, Ont., a pulp and paper mill which they say will eventually be equipped with machinery sufficient to produce 1,000 tons of newsprint a day, or about twice that of the largest mill now in operation. Two million dollars have already been expended on power development and in the erection of the first mill unit an 80-ton groundwood mill now practically ready to operate. The Company plans to add a 100-ton newsprint mill next year and to continue adding new units until the 1,000-ton maximum is reached.

Two of our older newsprint mills are expanding with the purpose of adding at least 260 tons a day to their present productive capacity. By the end of 1924 we should be producing newsprint at the rate of 1,500,000 tons a year, or about 65 per cent. of today's newsprint consumption on the North American continent, and an amount equal to the total production of the United States and Canada in any year prior to 1912.

We also have a new two-machine book paper mill under construction at Port Arthur, Ont., and a new 30-ton light weight specialty mill building at New Westminster, B.C. Other enterprises of a similar character are in the making.

The present capitalization of the industry is $347,553,333, according to the latest available figures. Thirty thousand persons are employed, exclusive of woodsmen who, at certain seasons of the year, number 25,000 to 30,000 more. The annual wage bill amounts to $45,253,893. The products, inclusive of pulp and paper, in 1920, were valued at $236,520,176, comprising 875,696 tons of newsprint, 73,169 tons of book and writing papers, 77,292 tons of wrapping, 158,041 tons of boards, as well as a variety of miscellaneous products, such as bonds, building papers, tissues, manillas, bags, wrapping, covers, etc. Our pulp mills produced 1,960,102 tons of pulp, having a total value of $141,552,862, and comprising 1,090,114 tons of groundwood; 138,624 tons of bleached sulphite; 515,649 tons of unbleached sulphite; 188,487 tons of sulphate; 5,768 tons of soda, and 21,460 tons of miscellaneous chemical fibre. It is of interest to note also that there were consumed in this production 2,777,422 cords of pulpwood having a value of $45,404,889.

In passing, it may be said that Canada has the largest single newsprint mill in the world, that of the Abitibi Power and Paper Co., at Iroquois Falls, Ont., with a daily capacity of 500 tons; about 1-3 of which is made on the widest machines ever built; the fastest-running paper machines, owned by the Laurentide Company, Limited, at Grand'Mère, Que., with a speed record of well over 1,000 feet a minute, of a sheet of 166 inches in width; the largest groundwood mill, the Chicoutimi Pulp Co., Ltd., at Chicoutimi, Que., producing over 400 tons a day, and the largest kraft mill, that of the Wayagamack Pulp and Paper Company, Limited, located at Three Rivers, Que.

The growth of the industry is best illustrated, perhaps, in the trade returns showing Canada's exports to other countries. Thirty years ago Canada's exports of pulp and paper were practically negligible. In 1890 they were valued at $122. In 1921 they had reached a value of $163,655,344. About 85 per cent of these exports go to the United States. The industry leads all Canada's manufactures in the value of its export trade. It ranks second in capitalization and is regarded as by far the most promising of all of our wealth creating industries.

The fundamentals underlying its success are the large areas of pulpwood still available, to which reference has already been made, and the comparatively low cost and easily developed water powers. The wood areas are, of course, far from being inexhaustible and it is feared are being used up more rapidly than ordinary prudence would justify. As already indicated, the industry itself is consuming an average of approximately 3,000,000 cords a year while another million cords are exported every year to the United States. Pulpwood consumption in Canada is increasing at an average rate of about 175,000 cords a year. Much wood is destroyed every year by forest fires and by insect pests. The authorities as well as the owners of the private forests are becoming aroused to the gravity of these conditions and efforts are now being put forth, not quite so extensively or as vigorously as they ultimately will be, for the conservation of the woods that remain and for the regeneration of future forests.

Canada's water powers are an important factor in the industry. The developed hydro-electric powers are estimated at approximately 2,000,000 h. p. of which about 375,000 h. p. are being applied to the production of pulp and paper. Several of our paper mills are now equipped with electric steam boilers, rendering them partially independent of other fuel supply.

These things, together with the constantly growing market in the United States for its products, constitute the underlying strength of the industry and seem to ensure for it a prosperous and increasingly important future.

In closing I should like to stress the view that so far as the pulp and paper industry is concerned we feel that there should be no dividing line between the two countries —that we are as one. Many of our mills are financed with American capital. (An official statement issued by the Dominion Government in 1919 showed that of the total capital invested in Canada's pulp and paper mills, at that time 68 per cent was derived from Canada, 24 per cent. from the United States, 4 per cent. from the United Kingdom, and 4 per cent. from other countries. The American proportion is thought since to have been materially increased.) Our mills employ without discrimination American and Canadian labor. They pay the American standard wages and sometimes more because only by doing so can they get the skilled help required to migrate from your country to ours. Our conditions are practically parallel with yours. Our transportation and fuel problems are the same. As you are able to bear witness, we sometimes operate jointly and with success, mills on both sides of the imaginary line which separates our two countries.

We, like you, believe in our industry and look upon it as one of the most important and most progressive. Our technical men co-operate with yours in extending a knowledge of paper-making in the publication of a series of text books intended to stimulate and encourage its study, a work to which we have already contributed some $20,000. We have recently established a correspondence course in practical and theoretical paper-making which is open to students on both sides of the line. We believe there is every reason in the world why the North American continent should be regarded as a unit in our particular industry and none why it should not. The fact that we are here today, representing mills on both sides of the border, and discussing the industry from a common viewpoint, is indicative, I think, of the mutual interest it holds for us and of the mutual concern which because of it, we have in each other's welfare.

FALL MEETING OF THE TECHNICAL ASSOCIATION

The Fall Meeting of the Technical Association of the Pulp and Paper Industry will be held on Monday and Tuesday, October 9 and 10, at the Hotel Wolverine, Detroit, Mich.

Business Session

On Monday morning, beginning at nine-thirty, a business session will be held at which progress reports of the standing committees will be received and other business transacted.

Waste in the Industry

The afternoon of Monday will be devoted to a general session on waste in the industry. Robert B. Wolf, who is in charge of this, has a very strong committee working with him and it is expected that material progress will be made.

Besides a discussion of the general procedure to be followed, the two special phases that were selected for first consideration will be dealt with. These are fibre loss in mill effluent and barking drum refuse.

As will be noted from the personnel of the committee, the industry is extremely well represented in all its branches as well as engineers and government bodies, particularly the Forest Products Laboratory, Madison, Wis.:

Committee on Waste in the Industry

R. B. Wolf, **Chairman**, 42 Broadway, New York, N. Y.

G. D. Bearce, **Vice Chairman**, News Print Service 342 Madison Avenue, New York, N. Y.

W. G. MacNaughton, **Secretary**, Technical Association, 18 East Forty-first Street, New York, N.Y.

O. L. Berber, G. D. Jenssen Company, 200 Fifth Avenue, New York, N. Y.

H. P. Carruth, Mead Pulp & Paper Company, Chillicothe, Ohio.

P. K. Fletcher, Fletcher Paper Company, Alpena, Mich.

H. H. Hanson, Eastern Manufacturing Company, Bangor, Me.

F. R. Hyatt, International Paper Company, Glens Falls, N. Y.

H. O. Keay, Laurentide Company, Ltd., Grand Mere, Quebec.

Ernst Malher, Kimberly-Clark Company, Neeah, Wis.

F. J. Morrison, Newton Falls Paper Company, Newton Falls, N. Y.

H. F. Obermanns, Hammermill Paper Company, Erie, Pa.

J. E. Plumstead, Jessup & Moore Paper Company, Wilmington, Del.

R. B. Robertson, Champion Fibre Company, Canton, N. C.

J. D. Rue, Forest Products Laboratory, Madison, Wis.

H. S. Taylor, Management Engineering &, Development Company.

Barking Drum Refuse

During the past month tests have been conducted on the performance of the best known types of bark presses. These tests were run under the cooperation of the Waste Committee, Forest Products Laboratory, the plant engineers, and the bark press designers. A report of the test will be presented at this meeting and arrangements will also be made to continue with evaporative efficiency tests to show the value of the pressed bark as fuel.

Sectional Meetings

On Tuesday morning there will be two sectional meetings, one on paper testing under the chairmanship of Frederick A. Curtis, and the other on drying under the charge of Frederick C. Clark.

Drying

This subject has been carried on by the Service to Members Committee under the direction of Frederick C. Clark. A report of progress will be presented and further plans decided upon.

It is planned to present a "drying code" similar in general to the boiler code for conducting tests of boiler plant efficiency. This will be discussed and, if possible, adopted. Records of various cooperating plants will also be given.

Plant Visits

Tuesday afternoon will be left free for members to make visits to mills in the vicinity of Detroit or to automobile factories or elsewhere in the section. It is expected that invitations will be received from Detroit Sulphite Pulp and Paper Company and the Port Huron Sulphite and Paper Company for members to visit these plants.

Hotel Accommodations.

Although arrangements have been made for the Fall Meeting and its sessions it will be necessary for members who attend to make their own reservations for hotel accommodation while in Detroit.

FIRST BOOK PRINTED IN MEXICO

While we are talking about Mexico, says *The Caravel*, we might remark that the first book printed in the New World was set up and run off in Mexico City. Even before the pale-faced Conquistadores brought the art of printing, the Aztecs had been writing hieroglyphic books on cloth. The Christian zeal of the early missionaries has left few of those strange manuscripts, but those few that have survived are jealously treasured by the great European and American museums and libraries. Like the Sybilline books, the fewer they are the more highly prized, and like those same books, they are in large measure scarcely intelligible.

And that helps to use up paper. How? Because it eggs on the learned men to write many heavy volumes about it all, as to who said what, and why, and when, and where, and (indeed) whether—

We are grateful to those unkown Aztec authors of ambiguous and equivocal texts. May the controversies about them last long. For it is the savants' function to consume paper. More power to their arm!

But an even greater help to paper-sellers is the Mexican Governments constructive policy of building new roads and establishing schools for the people throughout the country. Such things foster political stability, rouse the standard of personal comfort and broaden the intellectual outlook. And paper and ink, working through education, bring forth a harvest of commercial prosperity which requires yet more paper.

We prosper only as our customers prosper.

Uses of Lime in Pulp Manufacture[*]

Old and New Methods of Cauticizing Soda with Lime in the Soda and Sulphate Processes

BY GEORGE K. SPENCE
Chemist, New York and Pennsylvania Company,
Johnsonburg, Pa.

While limestone and quicklime are used in other branches of the paper pulp industry for the manufacture of calcium bisulphite liquor in the sulphite process and calcium hypochlorite used in bleaching pulp stock, it is the object of this paper to consider only the use of lime in the manufacture of soda and sulphate pulp.

The soda and sulphate pulp processes are closely allied in that the principal cooking agent in each case is caustic soda. In the sulphate process about 25 percent of the caustic soda is replaced by sodium sulphide, made by smelting sodium sulphate in the presence of the recovered sodium salts from the spent liquor and carbonaceous matter, which converts the sodium sulphate into sodium sulphide. The remainder of the soda is returned to the alkali room as sodium carbonate, and, as in the case of the soda pulp process, must be converted to caustic soda before it is sent to the digesters in which the wood is cooked. It is at this point in both processes where quicklime or calcium oxide is used to accomplish the conversion.

Pulp Mill Practice

The carbonate liquor is pumped to the alkali pan; which is equipped with an agitator, the required amount of lime added, boiled and agitated for fifteen minutes, agitated for an additional half hour after turning off the steam, the agitator stopped and the lime sludge allowed to settle. The strong liquor is made up to test about 14 1-2 deg. Bé. at 60 deg. F., and as it is impossible to completely causticize the sodium carbonate in liquor of this strength, on account of retroaction, the aim is to causticize about 92 percent of it. This when mixed with a first wash testing 97 percent causticity, will produce a liquor testing about 94 1-2 percent causticity at the digesters. When making liquor for the sulphate process about 25 percent of the causticity is replaced by sulphidity and requires the use of a proportionate lesser quantity of lime in the alkali room.

In the causticizing process the quicklime or calcium oxide is converted to calcium hydroxide when slaked in the liquor and the lime precipitated as calcium carbonate by taking carbonic acid from the sodium carbonate, and in turn converting the sodium carbonate to caustic soda according to the following equation:

$$CaO_2H_2 + Na_2CO_3 = 2NaOH + CaCO_3$$

Agitation Essential

Thorough agitation is an important factor in procuring the greatest efficiency from the lime used. If the agitator shaft is provided with one set of wings near the bottom, it should make at least thirty revolutions a minute, but when having three sets of wings at different heights on the shaft, the speed can be cut to about eighteen revolutions a minute with equally efficient results. Of two mills using the same size pans and all other conditions the same excepting the speed of the agitator shaft, which was 20 r. p. m. in one case and 30 r. p. m. in the other, the former was obliged to use 8 percent more lime to procure the same causticizing results.

Heat Value of The Lime

When slaking in the liquor, each pound of lime will furnish 480 to 500 B. T. U., or about 270,000 B. T. U. per 1,000 pounds of sodium carbonate causticized. This will raise the temperature of the liquor in the pan about 30 deg. F. and greatly assist in bringing the liquor to the boiling point.

The efficiency figures pertaining to the different steps in this process were fully covered in an article which I presented to the Technical Association of the Pulp and Paper Industry, was later published in Paper, for October 3, 1917, and incorporated into George S. Witham's book entitled *Modern Pulp and Paper Making.*

The Old Practice

It is customary to receive the lime in bulk form in carload lots, and for years the pulp manufacturer took what the lime producer sent him and made the best of it. If he received a poor car of lime and found that the causticity did not come up to the required percentage, more lime was added and the pan reboiled. In addition to using more lime, the precentage of sludge was so much increased than an excessive amount of soda was lost in the sludge discharged from the pan. In addition to this, considerable time was lost in the alkali room, which was very much felt, especially when the mill production had increased beyond the necessary capacity in the alkali room. Unless this condition continued for some time the lime producer would receive no complaint. At this time, when a car of lime was tested, a complete analysis was usually made and the lime reported as containing a certain percentage of CaO, without any reference to the quantity of active CaO present.

Later Practice

Conditions have changed during the past few years. At many mills every car of lime is tested for active CaO content before it is used. Should a car fall below a certain specified guarantee in this respect, the lime is either rejected or used with the understanding that claim be allowed for the difference in CaO content and also for loss of soda caused by an exessive amount of sludge discharged from the pan.

The Filter Press

The introduction of the filter press prevented the extra loss of soda due to excessive use of lime, as the soda is thoroughly washed from the lime cake and returned to the system regardless of the quantity of lime used. The filter press has also increased the capacity of the alkali room about 100 percent, for in place of washing the sludge four times by decantation it is only washed once in this manner, enough water being added to the first wash sludge to produce a proper mix to be conveniently handled by a pump and sent to the press. The soda is thoroughly washed from the cake on the press press and the washings returned to the system for making up strong pans and first washed in the alkali room.

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[*] Read before the National Lime Convention at the Cleveland meeting.

Quality of Lime Used

The pulp manufacturer, of course, desires lime of the best quality possible, consistent, with the price paid for it. The impurities usually present are silica, oxides of iron and aluminum, magnesium oxide, calcium sulphate and calcium carbonate. So far as causticizing is concerned, these impurities, with the exception of silica, exert no influence whatever, being simply present as so much ballast. An excessive amount of silica present especially when the lime is overburned, very much reduces the active CaO content of the lime, owing to fusion of the silicates which encloses some of the calcium oxide and prevents the slaking water from reaching it. This will be more clearly demnostrated further along in this paper.

In addition to being so much ballast, magnesium oxide is objectionable on account of its poor settling quality when present in caustic liquor; and its precentage is limited in specifications for whiting, should be lime sludge be reclaimed for this purpose.

Lime for causticizing purposes should contain about 90 percent active calcium oxide, and not over 1 1-4 percent magnesium or 1 1-2 percent silica when received at the mill.

Tests for Active CaO Content

As stated above, the principal test of causticizing lime is for active calcium oxide content, and there has been considerable contention as to the proper method to use for this test. Some advocate a modified standard hydrochloric acid test and some a miniature causticizing test, while for years I have been using an original method called the slaking test which is fully described and compared, with other methods in an article which I wrote for the November, 1921, issue of *Paper Industry* entitled "Control of Causticizing Lime by Determining the Active CaO Content." This method is based on the amount of water taken up by quicklime when slaking and compares well with results actually obtained in mill practice, which is not the case with the other methods mentioned according to my personal experience with them.

Effect of Over-Burning

As stated above, over-burning in presence of an excessive percentage of silica has a marked influence on the active CaO content, which can be plainly seen by comparing the table of analysis below.

Sample "A," which contains practically no silica, shows an active CaO content equivalent to about the difference between the total CaO and that present as carbonate and sulphate, which is an indication that there is nothing present to interfere with rendering all of this calcium oxide active. Sample "G," which has a high silica content and evidently over-burned only has an active CaO content of 62.87 percent, while the difference between the total CaO and that present as carbonate and sulphate would indicate an active CaO content of 78.60. This difference is caused by the excessive amount of silica, some of the calcium being present as silicate, but most of the difference can be traced to over-burning and fusing of the silicates so that some of the CaO is enclosed and rendered inactive as explained above.

Samples "B" and "D" have practically the same silica content, and while "D" contains more total CaO than "B" it has 6 percent less active CaO, showing than "D" was burned harder than "B." The same thing can be found true by comparing the analyses of samples "E" and "F."

The Lime Producer Can Assist The Manufacturer

By an occasional get-together meeting of the pulp manufacturer and the lime company furnishing his requirement of quicklime, a great many difficulties can be overcome and lime can be often selected so as to meet the conditions involved better. If the pulp manufacturer is marketing reclaimed lime for any particular purpose, the proper selection of quicklime can be made to fill the requirement better.

The lime producer can be of assistance to the manufacturer if he can regulate the burning of the lime so that when the silica is a little higher than usual the lime is not over-burned, for if it can be handled in this way the efficiency of the lime can be increased considerably. Some lime producers today are grinding burned lime and furnishing it to the mills in granulated form. This is a step in the right direction as it renders the lime more readily active and is of considerable assistance to the pulp manufacturer in that it enables him to add the lime to the liquor while pumping up the pan, and do away with the slake pan which requires the pan to be about three quarters full before the liquor touches the lime. It is necessary to use slake pans when lime is not ground in order to avoid getting occasional cores of limestone in the bottom of the pan, which are very destructive to agitators, and also have a tendency to plug the washout lime. When ground lime is received it relieves the operator of this difficulty. The lime producer could go one step further and put up some of the ground lime in quick opening drums, holding a certain unit amount of lime, so that storage could be carried in this form. The general shipments of lime for immediate use could be in bulk form owing to the excessive freight rate on return of empty drums.

The pulp manufacturer could then carry several cars of lime on hand and use it when shipments are delayed for any cause whatever, and return the accumulated drums in large scrap-iron cars.

One of the most difficult problems which the pulp manufacturer has to face when his plant is located

Sample	A Per Cent.	B Per Cent.	C Per Cent.	D Per Cent.	E Per Cent.	F Per Cent.	G Per Cent.
Water	.82	.98	.57	1.00	2.11	.70	1.50
Carbonic Acid	.60	.64	.51	.64	.90	.58	.63
Silica	.34	6.41	5.88	6.71	4.52	4.69	9.62
Oxides of Iron and Aluminum	.15	2.38	2.38	1.83	1.37	1.20	3.48
Calcium Oxide	93.27	86.19	87.95	86.54	88.59	89.35	80.32
Magnesium Oxide	4.25	1.79	2.14	2.62	1.64	2.67	2.65
Anhydrous Sulphuric Acid	.57	1.25	.60	.66	.63	.81	1.32
Active Calcium Oxide	91.88	78.77	76.01	72.80	84.51	81.10	62.87

some distance from the source of lime supply, is to keep enough lime on hand at all times without carrying too large a stock, as it will air slake and deteriorate on standing. It is unsatisfactory to handle lime after it has air slaked to any great extent. Men object to shoveling it and in addition it is difficult to determine the quantity of lime necessary to do the required amount of work. Air slaking will also deprive the lime of its heat value when causticizing the liquor, and it will take on carbonic acid from the air and render a proportionate quantity of the calcium oxide inactive owing to the formation of calcium carbonate. Storage in air-tight drums would solve this problem.

Research Department Essential

The question of the proper way to burn lime in order to get the largest possible quantity of active calcium oxide, the qualities in a lime which are conducive to rapid settling and the relation of other physical properties to the chemical composition of the lime, are problems that the lime producer and the pulp manufacturer do not have time to investigate. It is gratifying to know that the National Lime Association has such a department established and working on these problems. The proper amount of research concentrated on this line of work will no doubt produce results beneficial to the present users of lime and develop many new uses for this commodity.

In recent years the lime sludge which had been previously turned out as a waste product is being reclaimed by many pulp manufacturers for various purposes. At some mills the lime sludge is dried and marketed as agricultural lime and whiting, while at others it is reburned and returned to the system to causticize additional soda. This movement to reclaim the lime was primarily considered by the pulp manufacturer on account of being compelled to keep the waste lime sludge out of the streams.

ANNUAL MEETING OF LAURENTIDE COMPANY

The board of directors of the Laurentide Company were re-elected at the annual meeting held this week, F. E. McNally, assistant secretary, being chosen to fill the vacancy created by the death of R. B. Angus. George Chahoon, Jr. president, was chairman. Owners of upwards of 153,000 shares were represented in person or by proxy.

Speaking of conditions in the pulp and paper industry, Mr. Chahoon said that the situation had been stabilized to a large degree and that losses due to deflation had been balanced by suitable measures. The outlook for the industry was therefore good.

The following resolution on the death of Mr. Angus was passed:

"Resolved that the shareholders of the Laurentide Co., Ltd., assembled in annual general meeting, desire to place on record their deep regret at the death of Mr. R. B. Angus, former, president, and a director of this company since its inception. By Mr. Angus' death this company, as well as the community in general, has suffered an irreparable loss, and we desire that the proper officers of the company convey to the members of Mr. Angus' family our deep sympathy on this occasion."

The directors present were Mr. Chahoon, F. A. Sabbatoon, George H. Montgomery, K. C., C. R. Hosmer, and Edwin Hanson.

U. S. BUREAU OF MINES WORK OF INTEREST TO PAPER MEN

Study of Limestone Quarrying Methods

Dr. Oliver Bowles, mineral technologist of the United States Bureau of Mines is making a general study of the technology of limestone quarrying. Dr. Bowles recently visited a number of limestone quarries in Virginia and West Virginia for the purpose of making observations.

Tests of Georgia Clays

Tests of Georgia clays furnished by the Central of Georgia Railway Co., for its suitability of the manufacture of locomotive tile are to be made by the staff of the ceramic experiment station of the Bureau of Mines at a firebrick plant in Ohio.

Deterioration of Stored Cement

Deterioration of cement stored in bulk is less than in bags, owing to the smaller area exposed, states the United States Bureau of Mines, as the result of an investigation to determine the cause of deterioration of Portland cement during storage and transportation. Hydration takes place only at the exposed surface, and the bulk of the cement is unaffected. Cement transported in bulk must be shipped in a tight, closed car, and must be protected from moisture during loading, shipping, and unloading, preferably it should be used immediately after unloading at the point of destination. This practice is now followed by several manufacturers and where conditions are suitable it is becoming more common as its advantages are seen. Shipping in bulk effects a saving by eliminating the use of bags—which is an important item in the cost of cement—and it should also permit a saving in freight rates. Details of a study of the storage and transportation of Portland cement, with a bibliography on the subject, are given in Serial 2377, obtainable from the Bureau of Mines, Washington, D. C.

South Carolina White Clays

The methods of mining and preparing white clays for market in the vicinity of Langley, South Carolina, are described in Serial 2382, by W. M. Weigel, mineral technologist, just issued by the United States Bureau of Mines. Langley is about nine miles north of Augusta, Georgia. The clays mined in this district are sedimentary kaolins with few impurities. The prevailing color is white; at times the color is smoky grey or pink, and occasionally strong pink to lavender. The lighter colors usually become white on exposure to the air and on drying. The lower parts of the beds are usually the whitest. These kaolins are fine grained in texture, and have good plasticity; their tensile strength is from 8 to 36 pounds. They generally slake readily. Their specific gravity is from 2.50 to 2.25. The clays in the district are well adapted for use in paper stock, for which they are mainly used, and in pottery and china ware, without washing. In the district as a whole, considerable reserves of clay are yet untouched, hence the industry can be considered fairly stable. Serial 2382 may be obtained from the Bureau of Mines, Washington, D.C.

GOING UP!

Many men in the pulp and paper industry are sure to become leaders and to hold positions of responsibility. They will fit themselves for advancement by investing in Education. Write the Editor for particulars of correspondence cources in Pulp and Paper Making.

British Trade News

(From Our London Correspondent)

London, Sept. 5, 1922

The gradual headway in the production of newsprint by Canada, in comparison to that of the United States, is one of the subjects that receives a good deal of consideration on this side of the Atlantic amongst papermakers and the trade press. At one time London is told that the States papermakers suffered more from war than the British papermakers; another time the statement is made that in two years time Canada will exceed the Americans in newsprint production; and last, but not least, "The United States has come to be the world's largest producer of paper," and it wants a tariff law for protection, is the latest statement.

There must be something radically wrong in the States! The American papermakers were considered to have the most highly organised Association, technical and otherwise, in the world and it is a reflection on that body, representative of the "World's largest producers of paper," if Canadian competition and competition from other countries, is causing an outbreak of hysteria. That is the feeling in England, where the mill owners have to fight all the paper producing nations in the world—including the "world's largest producers of paper"—and keep their heads above water. True, the British mills—some of them—did "shout" for a tariff law after the Armistice, but it was only a "shout"—or pricked bubble. But why should America get uneasy over Canada's competition? And why should this uneasiness cause talk about more protection? The only conclusion Britishers come to is America is losing her supremacy and the "young school" is rising to the occasion.

Early Warning Given

For the past 15 years London is listening to talk about tariff law in America when competition becomes rife. Tariff law is considered a poor shield for a poor excuse. J. H. A. Acer, Treasurer of the Laurentide Coy., in 1921 made a very important statement to the "Financial Post," of Canada, which probably may be revived to suit the present occasion. It shows what Canadians were thinking of then—and it was made for the American competitor. "It is true," said Mr. Acer, "that Danish and Swedish companies can manufacture cheaper than we can, and produce newsprint and can place newsprint in the United States cheaper. But the foreign cheap newsprint papers are vastly inferior in quality and are of a coarseness of texture and poorness of quality unsuited for American journals. I doubt very much if some cheap foreign papers to begin with, could stand the strain of our quick running modern paper presses. And then the surface is not at all of sufficient fineness. I don't believe we have anything to fear from free trade competition with foreign companies. As I have mentioned they can produce a cheaper grade of paper; but they cannot produce the same quality of paper as the Canadians do and sell it in the States any cheaper. It is the high grade newsprint which is in demand and this the Canadian mills is producing and can now sell to good advantage, duty free. . . .At least 100,000 tons more Canadian newsprint paper will go this year (1913) into the States than in 1912."

In this statement lies one of the secrets of Canada's progress in the States market. In 1913 Canada produced 350,000 tons of newsprint as against America's 1,305,000 tons; in 1921 Canada produced 813,000 tons while America's output was 1,225,000 tons. The question now arises: Has America moved sufficiently, scientifically and otherwise, to meet the demands of her export and domestic markets? *Verbum sat Sapienti.*

Winter Paper Courses

The British classes for technical instruction in the manufacture of paper will commence this month and preparations are being made for the reception of pupils in the London and Manchester centres. The courses in the Manchester College of Technology are intended for 1st year, 2nd year and 3rd year students, and the practical instruction includes work in a testing laboratory. There are also machines to demonstrate practical papermaking, and for use in experimental operations and research, including the dyeing and finishing processes. Some of the questions given at the final examination to the London City and Guilds students are very interesting and they show the practical nature of the instruction imparted by the teachers. One question was:—In what fundamental respects do the following raw materials differ:—cotton rags, spruce pine wood, esparto grass, jute? Another teaser was:—What in your opinion have been the most important developments in papermaking during recent years? In what direction do you expect further progress will take place? When some of the students get through the list of questions the results are marvellous.

Canadian Chamber of Commerce

The Canadian Chamber of Commerce in London (55, Holborn Viaduct, London E. C. I.) is circulating through Mr. G. H. Ward, the Secretary, particulars about the paper and board industry of Canada. This is what is wanted as the more advertising it receives the better. Mr. Ward says there are 15 newsprint mills operating with a total daily capacity of 3,412 tons. He also refers to the board and wrapping sections.

The Papermakers Library

The library of the British Papermakers' Association now includes an exhibition volume of paper samples issued from three mills in Kent and in Buckinghamshire. The volume is an old one (1885) and specimens of hand-made, machine-made, and special papers are included in it, in addition to several illustrations. From a papermakers point of view the papers are deeply interesting and serve as a valuable link with the past. How the volume came to be produced remains a mystery at present. Mr. Foster, the Secretary, is investigating its origin.

Pulp from Canada

There have been big arrivals of wood pulp from Canada for the Aberdeenshire mills. The London steamer "Vexingham" which sails regularly to the Dominion, landed 6,000 tons for the Donside paper mill. The "Kyell of Kalmar" has also put into Aberdeen from Sweden with 1,800 tons of wood pulp. From the riverside to the mill, the pulp is conveyed by motor lorries. It is expected the "Vexingham" will make two more trips to Canada before the St. Lawrence is frozen.

The Pulp Market

The pulp market is fairly active all round for chemical and groundwood. Prices are unchanged and supplies are plentiful.

Getting Acquainted With Brompton

Last week the Editor had the pleasure of revisiting the Canadian Mills of the Brompton Pulp and Paper Co., at East Angus and Bromptonville, P.Q., and of seeing the American plants for the first time. It was a very interesting and instructive trip. Our party, which included Harvey Black of the *Financial Post*; Edward Beck, secretary of the Canadian Pulp and Paper Association; R. O. Johnson, Eric Reddy and Geo. Hodgson of Greenshields and Co.; Maj. Gordon Hanson of Hanson Bros.; B. Hazen Porteous of Burnett, Porteous and Co.; Geo. H. Carpenter of the *Gazette*; Wm. D. Chambers of Watson and Chambers; R. B. Verner of the *Financial Times*; and J. N. Stephenson, editor of the *Pulp and Paper Magazine*, was met Wednesday evening at Sherbrooke by Mr. J. A. Bothwell, general manager of the Brompton Pulp and Paper Co., Mr. L. M. Smith, his assistant, and Mr. C. C. Wilson, president of the Groveton Pulp and Paper Co. Dinner was served at the New Sherbrooke and the party welcomed by Mr. Bothwell and Mr. Wilson. The response was made by Mr. Beck and Mr. Stephenson explained the organization of correspondence courses in pulp and paper making and mentioned ways in which the companies could assist and encourage their men to be students of their work.

Thursday morning was spent in a visit to the East Angus plant of the company, where sulphate pulp was first made on this continent in August 1907. The community is very proud of the fine new 2 deck bridge over the St. Francis River at this point. The lower level is exclusively for the use of the company and tends to reduce both labor cost and accident hazard, as the main road formerly ran through the mill yard, crossing a railway siding at the foot of a very steep hill. The principal changes of note in the mill property are the increase in capacity of the sulphate mill, the provision for increased production of board by changes in the big 6 cylinder machine, the fine new club house, and the excellent, modern ground wood mill and screen room. This is equipped with 3 Waterous magazine grinders, each with its own motor. Provision is made for a fourth set. The wood comes in by 2 carriers, so that there is no danger of accident and a man who disobeys orders and takes wood from side where the conveyor is discharging gets his discharge at once. Each grinder can make 20 tons of air dry pulp per day. With dry wood from farmers it is a little less.

The pulp from this mill and the old mill at the upper falls is pumped to the screen room for screening, thickening or making into laps, and all that gets away is a little water that has been thoroughly strained to remove fibers. Most of this pulp goes directly to the newsprint mill and the board machine.

An interesting stop was made at the office, where the map of the company's extensive timber limits was studied, and their accessibility especially noted. The company is buying considerable freehold wood in order to conserve future supplies.

The party looked in at the Compton Country Agricultural Fair, of which Mr. Bothwell is an enthusiastic booster, and proceeded to the ground wood mill at Bromptonville. This is a good example of early construction. It was the original mill of the company and has been producing about 100 tons a day continually for years. Most of this pulp is exported to the American divisions.

The motor trip from Sherbrooke to Groveton, N. H., was delightful.

The heartiness of the welcome was increased by being entertained at Groveton Lodge, the company's house, and at the houses of officials of the company. The evening was spent at a dinner meeting of the Groveton Men's Club, a fine-spirited community organization, at which Mr. Beck delivered the excellent address printed elsewhere in this issue. This was followed by several musical numbers and some more or less humorous stories. Mr. Wilson welcomed the visitors to Groveton and Mr. Bothwell paid tribute to the leadership and example of Mr. Wilson as the head of the Groveton Company. Mr. Bothwell, in a strong speech, urged every man connected with the company to concentrate on success. He said it was an absolutely false and unfounded idea that the man with a pull got the good jobs in the organization. No such word is recognized, it is push that gets a man forward. He only wished that every man had the ambition to be president of the company. Nothing could be better; it would make an unbeatable organization.

MR. F. N. McCREA,
President of the Brompton Pulp and Paper Co.

The Groveton plant was inspected Friday morning and every point noted, from the wonderful wood room to the use of sulphur in the hen yard. This mill makes the sulphite pulp used locally and at East Angus. Marble is used for making the acid and one of the guests was seen selecting a gravestone. The barking drums and knife barkers are enclosed in the same structure with the chippers, chip crushers, re-chippers and chip screens. It is a fine lay out. The Groveton mill specializes on high grade manillas and sulphite bonds.

Reluctantly, but hopefully, the guests left their friends, some new, some old, and started for Claremont, one of the party filling the extra space in his young trunk with samples of pulp wood. And it rained—it poured! One jovial joker sneaked his car up behind the general manager's and fired a gun, which caused the G. M. and the chauffer to get out in the rain to see which tire blew out, leaving the rest of us to wonder how wet we would get making the change.

We got to Claremont, N.H., all right and spent as much time as healthy appetites would permit in the inspection of this unique plant. The Claremont Paper Co. was the first mill in the United States devoted exclusively to the manufacture of kraft paper. Although established in 1867 the mill, which has been considerably extended, is in fine shape and is exceptionally compact for a 3 machine mill. This is due to the peculiar location which permits the most economical utilization of space and a big saving in moving of materials, steam, etc. A final dinner party at the Hotel Moody furnished an opportunity for meeting the American sales force and getting off some extemporaneous speeches all of which was greatly enjoyed. Mr. Winter, of the Chicago office, told of a complaint he had received, that Claremont kraft was so strong in strip form, as used in twisting into yarn, that it would not break when the spindle was full and the operator had to stay awake so as to stop the machine. Some one else suggested that if the men in the pulp mill were required to wear boots there would be less complaint about the odor. Mention was also made of the fact that the Brompton eggs are not all in one basket; the company cuts its own wood, makes it into 3 kinds of pulp and converts it all, even the screenings, into at least five grades of paper, all in its own mills. This has doubtless been an important factor in keeping all the mills busy throughout a long period of slack business.

About half the party went back to Montreal on the night train; several returned by motor Saturday; the editor went on to Bellows Falls, Vt., to see the other Brompton subsidiary. This was found to be a compact little 2 machine mill especially adapted to the manufacture of light weight papers. This mill has a valuable water power concession.

And so ended a very busy but exceedingly enjoyable trip.

MATTAGAMI PULP AND PAPER CO.

There has been a considerable improvement in working conditions for the Mattagami Pulp & Paper Co., during the past few months, as the plant has been working to capacity in the production of pulp. A fairly ready market has been found for the entire production and prices sufficient to show some reduction in the company's banking indebtedness through the liquidation of inventories. The operation of the company's properties continues in charge of the receiver "Investment Items," referring to this, states that "there is a tendency toward higher prices for easy bleaching sulphite pulp, which higher prices if realized, will materially improve the company's position."

PAPER WEEK IN CHICAGO

Reduced rates under the certificate plan have again been secured for the fall meetings of the American Paper and Pulp and affiliated associations, and as was the case in the Spring convention, these rates will also apply to the members of the National Paper Trade Association. Under this plan, "Paper Week" in Chicago, the week of October 16 to 20 will be regarded as one big paper conference, with all those in attendance benefited by the rate of one and a half fare for the round trip.

Under this plan, it will be necessary for all those wishing the reduced rate to secure a certificate from the agent at their home stations, and to have this certificate validated by the railroad agent at Chicago, after Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association has signed the certificate.

It was figured that at the spring convention this reduced rate service saved the paper industry nearly $5,000 in railroad fare. To secure the rates, however, the railroads insist that the convention visitors secure certificates, and have them properly validated. Otherwise the interstate commerce laws do not permit the granting of the reduced fare. A special circular outlining the procedure is being prepared by the American Paper and Pulp Association for the benfit of those wishing to take advantage of the reduction.

Meanwhile the general program for paper week is being rapidly formulated. Thursday, October 19, will be the day of the general meeting of the Americcan Paper and Pulp Association, and of the joint luncheon of the American Paper and Pulp Association and the National Paper Trade Association. Other meetings of manufacturers associations have so far been arranged as follows:

Tuesday, October 17	
Book Paper Manufacturers	10.00 A. M.
Gummed Paper Manufacturers	10.00 A. M.
Salesmen's Association	10.00 A. M.
Waxed Paper Manufacturers	10.00 A. M.
Woodlands Section	10.00 A. M.
Cover Paper Manufacturers	2.00 P. M.
Pulp Manufacturers	2.00 P. M.
Salesmen's Association Banquet	7.00 P. M.
Writing and Cover Paper Manufacturers	7.00 P. M.
Wednesday, October 18	
Vegetable Parchment Manufacturers	10.00 A. M.
Writing Paper Manufacturers	10.00 A. M.
Wrapping Paper Manufacturers	10.30 A. M.
Cardboard Manufacturers	2.00 P. M.
Toilet Paper Manufacturers	2.00 P. M.
Tissue Paper Manufacturers	7.00 P. M.
Thursday, October 19	
American Paper and Pulp Association	10.30 A. M.
Joint Luncheon, Manufacturers and Merchants	1.30 P. M.

Notice of the making of the Technical Association is printed on another page.

PULP AND PAPER NEWS

Mr. A. M. Irvine, director of Becker and Company, Limited, Montreal, has returned from a business visit to England.

Mr. J. L. McNicol, in a letter written from Banghok, Siam, states that considerable progress has been made with the pulp and paper mill under construction, but that it will be another six months before paper will be made. Mr. McNicol has been engaged by the Siam Government to inaugurate a paper making industry in that Country.

Mr. A. Hodgson, of Macfarlane, Son & Hodgson, Montreal, is back from a trip to England.

The Montreal Paper Club will resume their luncheons on the second Tuesday in October at the Queen's Hotel.

The following American publishers recently paid visits to Montreal—Messrs. W. C. Rick, Journal of Commerce, New York; W. Tuttle, Philadelphia Inquirer (on his way to the Saguenay); W. H. Rible, Ohio State Journal; C. H. Morse, Worcester Pool; W.J. Conners, Buffalo Courier, and E. A. O'Hara, Syracuse Herald.

Miss Elsie Irene Crabtree, daughter of Mr. David Crabtree, general superintendent of the Beauharnois division of the Howard Smith Paper Mills, Limited, was married on the 20th inst. to Mr. Geo. Bidwell. The marriage was celebrated at Beauharnois.

The Canadian Export Paper Company, Limited, Montreal, has issued a folder, with the title of "The New Mythologg" 1922. It is a boost for the comic supplement, which it declares "is founded on the very pleasing spectacle of somebody getting the worst of it". An article on the comic supplement from the New York Tribune is reprinted, it being also stated that the Company in co-operation with the New York Tribune has manufactured a special paper for comic supplements, "the quality of which, as we are told, has added very materially to the circulation value of this very popular Sunday paper feature."

Work on the new machine building of the Provincial Paper Mills, Ltd. at Port Arthur is going ahead very smoothly and rapidly. In fact, the buildings are practically complete and the installation of machinery will begin in a short time. Excellent progress is also being made on the 2 machine newsprint mill for the Fort William Paper Co. at Port William, Ontario. It is expected paper will be made before the ground is white with snow. Both of these mills have been designed by H. S. Taylor, Ltd., whose engineers are supervising the construction.

MR. GORMAN BACK FROM BRITAIN

Mr. W. Gorman, Montreal, Manager of the Provincial Paper Mills, Limited, has just returned from a three months' visit to England and Scotland. His health is now restored. It was 15 years since Mr. Gorman was in the Old Country, so that conditions have greatly changed. His observations and inquiries lead him to take a rather pessimistic view of the general industrial position. He is of the opinion that the position demands a changed attitude—that the extreme demands of labor are unsettling in their effect, and that until things are on a more stabilized basis the recovery from the war will not make rapid progress. Many men are still receiving the unemployment grant, and are content with this rather than to look for steady employment.

"The British paper industry is not," said Mr. Gorman, "in a satisfactory condition." He visited both English and Scotch mills, and found that while substantial orders were being executed for all parts of the world, the demand for domestic account was poor. This was, in part, due to the large amount of European paper imported at prices which the British mills could not touch. He questioned whether there was any money in the export trade. About three-quarters of the total paper machines are employed, while in some instances mills are shut down.

The owners of the mills are keenly alive to the importance of efficient equipment and large amounts have been spent with object in view. They also recognized that it was imperative to increase the speed of the machines and thus secure greater output in order to meet foreign competition. The British mills, however, are maintaining the quality of their papers—"It is splendid," declared Mr. Gorman.

Some of the mill owners told Mr. Gorman that the labor problem was the crux of the situation, and that this would have to be solved before the trade would be revived to any appreciable extent.

PULP AND PAPER HELPS TRADE BALANCE

The improvement in Canadian trade which first became apparent in the month of May of this year, after the long decline, was continued in August, the showing for which was the most favorable in every way since that of November, 1921, when the trade figures gave effect to the 1921 harvest. For the third month in succession there was a favorable balance, although the increased power of the country to absorb raw materials was reflected in an increase of over 6 millions in imports, as compared with July. It is the first August in three years which has shown a favorable balance and the continued improvement is further assurance that the turn of the tide has really come and, in view of the possibilities which a very good harvest holds out, is distinctly encouraging. The improvement in export trade is well distributed with agricultural products, iron and steel and forest products most prominent.

Last year at the end of August there existed for the fiscal year to rate a debit balance of more than 40 millions. There is now for the five months of the fiscal year a favorable balance amounting to over 13 millions.

NEW RECORD FOR ABITIBI

Steadily the Abitibi Power and Paper Co's plant is bringing the total of a day's output to the mark of 500 tons, which has been aimed at for some time. It has reached an output for a single day of 493 tons, although, of course, the average for the week or month will not touch this figure. The total is now running well over 470 tons, however, and it will not be long before 500 tons daily, or 150,000 tons a year, will be recorded. The increase of the output is important in connection with earnings as a higher output, besides adding to the turnover of the Company, and the net profits, means a lower production cost per ton.

Technical Section

REVIEW OF RECENT LITERATURE

A.—Properties, Chemistry and Testing of Raw Materials and Finished Products

A-1, A-15. Determination of Cellulose in Wood by Means of Chlorine in Carbon Tetrachloride. EMIL HEUSER and H. CASSEUS. **Papier fabr.**, xx, Fest. u. Auslandheft, 80-93, (1922). Abridged translation by C. J. West in **Paper Trade J.**, ixvx, No. 9, 47-48, (Aug. 31, 1922). The Cross and Bevan chlorination method is simplified by using a solution of chlorine (8.10 g.) in carbon tetrachloride (100 g.). The wood should be ground to a meal of medium fineness; too coarse particles are unevenly attacked and too fine particles interfere with subsequent filtrations. The facts and resins need not be extracted. The testing was carried out in a special apparatus consisting of a short wide cylindrical separating funnel, the lower part of which is ground to fit the upper part of a Gooch crucible. It is detached for shaking and attached for filtration and extraction. About 1.5 g. of wood is treated with 50 g of the chlorine solution. Three chlorinations are carried out. After each chlorinations the carbon tetrachloride is filtered off, and the residue is washed with alcohol and with water and is then treated with a 2% sodium sulphite solution. Extremely concordant results were obtained. — I.G.

A-1. Lignin Investigations. KARL H. A. MELANDER Pappersmassekontoret, Stockholm. **Cellulosechem.**, ii, 41-43, (1921); **Paper**, xxviii, No. 21, 19-21, (July 27, 1921). Translation by C. J. West. The waste liquor from the sulphite process contains at least two kinds of sulphur-containing lignin substances, for the addition of 21 g. of salt per 100 g. of liquor at 65° to 70° C. produces a precipitate of alpha-lignin, whilst beta-lignin remains in solution. In the waste liquor alpha-lignin-S-acid is combined with calcium, but on salting out the product contains only a small proportion of calcium. The analysis of a number of preparation of free alpha-lignin-S-acid shows that the existence of a well-defined sulphonic acid cannot be assumed. The conclusion is drawn that the products contain relatively high proportions of loosely-bound SO_2. When alpha-lignin in relatively dilute solution is precipitated with hydrochloric acid the free alpha-lignin-S-acid is obtained, whereas in concentrated solution hydrochloric acid precipitates the sodium salt of alpha-lignin-S-acid. — A.P.-C.

A-1. Lignin Investigation. KARL H.A. MELANDER **Cellulosechem.**, ii, 69-73 (1921); **J. Soc. Chem. Ind.**, xl, 620A, (Sept. 15, 1921). Alpha-lignin-S-acid, as obtained from sulphite waste liquor, forms compounds of widely varying solubility in water with aromatic amines, usch as **o**- and **p**- toluidine, phenylhydrazine, alpha-and beta-naphthylamine, and quinoline. When alpha-lignin-S-acid is heated with alkalies acetic acid is liberated, so that the sulphur-free alpha-lignin is probably a mixture of substances derived by splitting off of one or more formyl or cetyl group from a substance present in wood. — A.P.-C.

A-1. Lignin Investigations. KARL H.A. MELANDER **Tekn. Tidskr., 1918**; **Chem. Soc. Abs.**, cxvi, Pt. 1, 473-474, (1919). By treatment of sulphite waste liquor with sodium chloride, the author has obtained a substance which differs considerably in its properties from that prepared by Klason by precipitation with calcium chloride. After purification it forms a mixture of similar ligninsulphuric acids of high molecular weight in which a portion of the sulphur dioxide is loosely held in ester-like combination. The author designates the mixture **alpha-lignin-S-acid**, and has shown that the main portion of it is monobasic, whilst only a small portion is dibasic. Vanillic acid, protocatechuic acid, and catechol are formed when it is fused with alkali under various conditions. Acetic acid and small amounts of higher fatty acids are also produced, thus pointing to the presence of acetyl groups. Free alpha-lignin-S-acid is obtained as a pale-brown powder, which readily becomes resinified when HCl is added to the solution of the salted-out product. It is hydrolyzed by treatment with alkali. There appears to be little prospect of obtaining the acid in the crystalline condition, since analysis indicates that it is a mixture of relatively complex compounds of almost identical percentage composition. The sodium salt is rescribed. The sodium salt is not perceptibly hydrolyzed; determinations of the molecular weight in aqueous solution by the freezing-point method gave values between 822 and 991 for different specimens. The electrolytic conductivity of aqueous solutions of the sodium salt at different dilutions has also been determined. —A.P.-C.

A-3. Use of "Pickerel-Weed" for the Manufacture of Pulp. P. A. I. GOLMAN. Fr. patent 525,172. **Mon. Papeterie Française**, liii, 127-128, (March 1 1922). Claims the use of "Pickerel-weed" (Pontederia cordata) as a raw material for the manufacture of textiles or of paper pulp.-A.P.-C.

A-3. The Differentiation of Hemps, Flaxes, and Other Fibres and Textiles. Papeterie, xliv, 633-637, (July 25, 1922). A table is given of the color reactions of various grades of hemp, flax, and other textile fibers, and of chemical wood pulps, with a solution of phloroglucinol 1.26 g., water 1000 cc., concentrated hydrochloric acid 200 cc. Obserations need not be made under the microscope.— A.P.-C.

A-3, E-0, K-4. Paper Pulp from Straw. C. and J. BACHE-WIIG. U.S.A. patent 1,418,353, June 6, 1922. The straw is softened by means of a salt solution, subjected to a kollergang treatment, digested with sulphite solution, and given a second kollergang treatment. It is the ready for paper making.—I.G.

A-4, A-5. The Chemical Analysis of Paper Pulp. F. M. LOUVIER. **Mon Papeterie Française**, liii, 170-171-198-199-221-222, (April 1 and 15, May 1, 1922). Brief descriptions of the methods of determining moisture, ash, cellulose, lignin, resins, fats and waxes, gums free acidity, copper number, aldehyde number, acid number, SO_2 number (the amount of SO_2 required to decolorized the amount of fuchsin fixed by 100 g. of pulp), free and combined chlorine, and sulphur and sulphur compounds. — A.P.-C.

A-3, H-1. Determination of Free Chlorine and Hypochlorous Acid in Concentrated Salt Solutions. M. C. TAYLOR and C. A. GAMMAL, Mathieson Alkali Works. **J. Ind. Eng. Chem.**, xiv, 632-636, (July 1922). The method described involves three steps: (1) Determinations of the "available" (free chlorine and chlorine as NaOCl and HOCl) chlorine in the sample with potassium iodide and thiosulphate, using a known excess of standard acid; (2) Determination of the excess of acid remaining after the thiosulphate titration by titrating the iodine liberated from Kjeldahl's solution (a mixture of potassiium iodate and iodide); (3) An aeration step in which the rate of washing over of free chlorine is accurately measured. The method and the accuracy of the results ar discussed at some length. — A.P.-C.

A-9, H-5. Bleaching by means of Chlorine Compounds. R. FOURNIER. **Papier**, xxv, 253-257,296-301, (June and July 1922). A general description of the properties of chlorine bleaching compounds and of their utilization in the paper industry. — A.P.-C

A-12, K-10. Aluminum Compounds for Sizing Paper. G. MUTH. Ger. Patent 345,315. Addition to Ger patent 319,420. The treatment of aluminum compounds as described in the chief patent is more expeditiously carried out in closed vessels under a high temperature and pressure. — I.G.

A-14, K-1, K-10. Testing the Sizing of Paper. D. MOURREAUX. **Mon. Papeterie Française**, liii, 216-218 (May 1, 1922). The author suggests the following method. Draw three lines of equal length but of increasing thickness by means of a round-pointed (Leonardt) pen, and note the time of drying of the various lines or portions of lines. When all the lines are dry, observe the time of drying of the line or portion of line which has penetrated to the other side of the paper. It would also be necessary to note the atmospheric humidity, as it has a very appreciable effect on the results of the test. — A.P.-C.

A-14, K-0. Notes on the Copying Power of Letter-Copying Paper. H. MICOUD. **Monit. Papeterie Française**, lii, 647-649, (Oct. 15, 1921). Translated by A. Papineau-Couture in **Paper Trade J.**, lxxiii, No. 26, 47-48, (Dec. 29, 1921). Comparison of two samples of letter-copying paper, one of which was satisfacory and the other not, showed the following differences. The satisfactory paper was composed of 30 per cent hemp rags, 45 per cent cotton rags, and 25 per cent chemical balsam pulp; the other consisted of 100 per cent chemical balsam. The former was more opaque, softer, more flexible, had less rattle and more bulk, which latter shows that the fibers were less crowded together and consequently had greater absorbing power. Both pulps seemed to have been well hydrated, which was to be expected from paper weighing 15 g. per sq. m. The good paper, however, had been beaten in several stages: the fibers were cut fairly short so as to give good absorbency, and just sufficiently hydrated to work on the machine. The poor paper had been beaten all in one operation and was too "wet", resulting in poor absorbency. The ash was practically the same in both papers (0.67 and 0.7 per cent). The resin content of the paper does not exert much influence on the quality of the paper, provided it is not excessive. — A.P.-C.

A-0, A-14, K-23. Rational Use of Filter Papers. E. J. GUILD, Chief Chemist, W. and R. Balston Ltd. **Chem. Trade J.** lxx, 721-722, (June 16, 1922). A brief discussion of the qualities of filter papers, with practical hints as to choosing the proper grades for various classes of work. — A.P.-C.

C. — Wood Preparing and Equipment.

C-7. Barking Drum. H. T. HOLM. Can. patent 221,886, Aug. 8, 1922. This consists essentially of a solid cylindrical metal shell, the inlet opening of which is smaller than the outlet. One or more jets of water are provided, entering at the inlet in a more or less axial direction. Oblique ribs are secured to the inner side of the shell. The bark is suitably separated from the water which is then used over again. — A.P.-C.

E. — Acid Processes of Pulp Manufacture and Equipment

E-1. Estimation of Sulphur Dioxide. G. BASIL BARHAM. **Chem. News**, cxxiv, 279-281, (1922); **Chem. Soc Abs.**, cxxii, Pt. 1, 520, (July 1922). Titration with potassium permanganate under definite conditions is recommended for the estimation of SO$_2$. Dilute sulphuric acid is treated with a definite volume of standard permanganate, and the mxiture is then divided into two equal portions; the SO$_2$ solution under examination is added to one portion and the permanganate solution is added until the coloration is again equal in intensity to that of the other portion which has been reserved for camparison. To ensure the coloration being of the same tint, the acid solution should be reduced and oxidized once or twice (with sulphite and permanganate solutions respectively) before it is used for the actual determination. — A.P.-C.

E-2. Decomposition of Sulphite Waste Liquor. K. MORCH. U.S.A. Patent 1,415,843, May 9, 1922. Same as Can. patent 221,733, Aug. 1, 1922. See this journal, xx, 791, Sept. 14, 1922. ——I.G.

E-2. Utilization of sulphite Waste Liquor. E. MUERBE. Ger. patent 347,658. Addition to Ger. patent 344,955 On entering the separator described in the main patent (See this journal xx, 417, May 18, 1922.) the liquor is mixed with a substance, such as sodium bisulphate, in a finely divided form, which assists the liberation of SO$_2$. Suction is applied to the condenser to prevent back pressure. Nearly 30% of the sulphur present in the original liquor can be recovered in a useful form. Almost perfect separation is obtained of free and loosely-combined SO$_2$, and also of that combined with lime. All the calcium present is recovered as calcium sulphate in a finely divided state. — I.G.

E-2. Adhesive from Sulphite Waste Liquor. BERLINER DEXTERIN FABRIK OTTO KUTZNER. Ger. patent 353,129. Th concentrated liquor is mixed with sodium thiosulphate and an acid (preferably sulphuric) to precipitate colloidal sulphur and at the same time eliminate the bad odor; e.g., 100 g. of 38 to 39° Bé are heated to 40°C, 5 g. of sodium thiosulphate are added with constant stirring, and when dissolved 5 g. of sulphuric acid are added. The color of the mixture clears up at once, a good adhesive being obtained.— I.G.

E-2, K-10. Use of Sulphite Waste Liquor for the Preparation of Paper Size. A. KUMPFMILLER. Ger. patent 355,813. Coumarone resins are rendered soluble or easily emulsifiable by mixing with sulphite waste liquor of over 30° Bé. The mixture is directly soluble in water without further treatment, forming a pseudo-solution or a very stable emulsion from which the resin will not settle out. Sizing is carried out in the usual manner. — I.G.

E-5. Improvement to Autoclaves (Digesters). Fr. patent No. 513,406, M. LAMASSIAUDE, Haute Vienne, France. **Papeterie**, xliii, 748,751, (Aug. 25, 1921). The loss of heat from autoclaves or drier heads is greatly diminished by means of a double envelope, which forms a chamber which is put under vacuum and in which are placed a series of parallel plates having a low radiating capacity so as to reduce the amount of radiation through the chamber. — A.P.-C.

E-0, K-4. Process for the Manufacture of Paper Pulp from Cordage, Twine, Etc. A. BOILEAU. Addition to Fr. patent 506,569 (See this journal, xix, 43, Jan. 13, 1921.). **Mon. Papeterie Française**, liii, 101-103, (Feb.

(Continued on page 818)

NEW BRUNSWICK NEWS

Owing to the existing financial difficulties of the company, Clarke Brothers Limited, are not operating to Glen Falls plant where corrugated paper and cardboard are manufactured. This is the factory formerly used by the Ford Meter Manufacturing Company of Canada Limited for the assembling of Ford cars and trucks in the maritime provinces. Clarke Brothers Limited took over the building two years ago and operated it until recently. The pulp mill at Bear River controlled by the company and the sawmills controlled by this concern also at Bear River, are being operated, there having been but a short period of idleness. It is expected that a satisfactory financial adjustment will have been made before winter, which will permit of resumption of activities at the Glen Falls plant. Clarke Brothers Limited in addition to the operation of the pulp mill, corrugated paper, box, and cardboard plant, and two sawmills, control large pulp lands in the Annapolis Valley and other sections of Nova Scotia and New Brunswick. A small steamer is also operated between Bear River and St John on the Bay of Fundy.

Archie Alcorn and Harry Murchie, pulpwood dealers of New Brunswick, the former of Blackville and the latter of St. Stephen, were formerly the owners in partnership of Bill Sharon, a trotter that is now a winner on the Grand Trotting Circuit. Alcorn and Murchie bought this horse for $2,500 and sold him six months later for $25,000 to American parties.

The proposed extensions to the St. John plant of the Nashwaak Pulp and Paper Company at the Reversible Falls, will be started just as soon as the company receives assurance from the city water and sewerage department that sufficient water will be available. It was planned by the Oxford Paper Company, which holds the controlling interests in the Nashwaak Pulp Company to start the additions this fall but owing to delays in negotiations with the city of St. John for the extra water, the extensions may not be started until after Christmas, or perhaps not until the spring. Several delegations from the Nashwaak Pulp and Paper Company have waited on the city council of St. John to seek assurances of sufficient water supply from the city. General Manager Beedy was a member of one of the delegations. Mr. Beedy has been spending much of his time in New Brunswick during the summer and fall, overseeing developments and inspecting the interests of the company, including the pulp mill at St. John and the proposed extensions to the plant, the vast pulpwood tracts in central and northeasthern New Brunswick along the Nashwaak and Miramichi rivers site of the proposed new paper mill at the mouth of the Nashwaak near Fredericton and Marysville, and the coal lands acquired by the company at Grand Lake.

There are many thousands of cords of pulpwood lying in the woods and at the roadside through the maritime provinces, particularly in New Brunswick, and much of this is valueless. Some of this wood was cut and sawed, and later transported through the woods to the roadside, three and four years ago and held in quest of higher prices than even then were prevalent. Then came the decline and the wood has remained unsold. A conservation estimate is that at least 100,000 cords of pulpwood are decaying in the woods in New Brunswick, a total loss to the operators.

Talk of building a paper mill at the junction of the Tobique and the St. John river has again revived. The Fraser Companies Limited, which announced intention of constructing a paper mill at this site and then abandoned the scheme are understood to be once more favorable to building the mill. It is understood that financial arrangements may be made whereby the industry will be a reality, and a start on the building operations made in the spring. Owing to the financial difficulties of Fraser Companies Limited, the Tobique paper mill proposal was dropped although sanction had been obtained from the provincial government for the building of the mill. Salmon fishing interests opposed the building of the mill, asserting salmon fishing would be destroyed on the Tobique if the mill were built.

PROGRESS REPORTED IN RIORDON PLANS

In the current issue of "Investment Items," published by Royal Securities Corporation, a statement is made in regard to the present condition of the Riordon Co. which I. W. Killam, president of Royal Securities, is endeavoring to place on a substantial basis again. The article states that "negotiations are in progress between bankers and others interested in the company's affairs towards the working out of a plan for definite rehabilitation of Riordon finances and management. Having in view the proven value of the company's property and its proven earning power and the very large investment of bond holders, shareholders and creditors, it would seem as if plans would sooner or later mature which will put on a sound operating basis the affairs of this large and important enterprise."

Kipawa and Hawkesbury mills are running now at full capacity and the company is booked up with orders through the month of October. Market tendency is towards higher prices for bleached sulphite pulp which the company produces and these prices if realized will have a favorable effect on the situation of the company. It will be recalled that as a result of the operations of the mills for the past ten months' bank loans which stood at $4,400,000 in November, 1921 had been reduced to $2,550,000 at July 31, 1922.

ANOTHER PAPER MILL FOR BRITISH COLUMBIA

Victoria, B. C., Sept. 13.—Negotaitions for the establishment of another large British Columbia paper mill were started with Premier Oliver today by representatives of the Seaman Paper Company, of Chicago, and J. Read, of Vancouver, head of the Bridge River Power Company, which controls enormous power rights. Mr. Seaman is here conducting the negotiations personally. His company is described as the largest paper-selling company in the United States. It is proposed to erect the pulp and paper mill at Seton Lake, which is 100 miles up the Pacific Great Eastern Railway from Squamish. Besides water power facilities, the Chicago men are looking into the pulpwood resources of the surrounding district, which they will draw on for raw materials. The Seaman interests are now looking to British Columbia for their raw materials following the decision of the syndicate formed by the Chicago Daily News and the Chicago Tribune to establish their $13,500,000 paper plant at Elko, B. C.

Note: The above dispatch is by the Canadian Press. We have been unable to get confirmation from the papers mentioned that they are behind the Elko proposition.—Ed.

Mr. and Mrs. R. O. Sweezey, Montreal, have left for a three hundred mile canoe trip through Northern Quebec, where they purpose spending two weeks hunting and fishing.

UNITED STATES NOTES

An involuntary petition in bankruptcy was filed last Friday in the United States District Court, New York City, against the Gatti-McQaude Company of New York and New Jersey, dealers and producers of paper pulp and paper products. The liabilities of the firm are said to be $1,000,000 and the assets $500,000. The petitioners —W. C. Jones & Company, Grattan & Knight Manufacturing Company, and Samuel H. Waldstein—allege that some six or seven months ago the company called a meeting of creditors and that a committee was formed which thereafter conducted the affairs of the company. For this reason the petitioners believe the corporation is insolvent and will be unable to continue business. The firm is headed by Joseph Gatti.

The New York State Industrial Commission, in its report on factory employment during the month of August, states that there has been an increase in the number of workers employed in the paper box and bag industries. A general gain of about 13 per cent. for August of this year as compared with August, 1921, is reported for all of the State's manufacturing establishments.

Protest against the recent appointment of George Carter as Public Printer was made in a resolution offered at the convention of the Typographical Union, in session at Atlantic City last Thursday. Carter, who was named a short while ago by President Harding, is not a member of the union, and the charge is that he is not eligible for the office.

In the report made to the two Houses of Congress last week, the conferees on the tariff bill placed the following rates on paper: Printing paper, not specially provided for (exclusive of newsprint, which is free), 1 cent a pound and 10 per cent. ad valorem; writing, letter and note-paper, plain, 3 cents a pound and 15 per cent.; paper envelopes, plain, 3 cents a pound and 20 per cent. Mechanical and chemical wood pulp remain on the free list. The duty on casein is reduced from 4 cents per pound to 2½ cents a pound.

Arthur Van Ohlen, of Little Ferry, N. J., and Edward Howlinski, of Hackensack, N. J., were scalded and suffocated to death last Thursday by escaping steam under a boiler in the plant of the Continental Paper Company, Bogota, N. J. The men had been sent by their foreman to clean out the steam traps below the boilers. They had finished their work and were coming out when a signal was given to release the steam which had been temporarily cut off. Escaping steam enveloped them in a thick scalding cloud. They were dead by the time the steam flow was halted.

Philip H. Wilbour, Insurance Commissioner of Rhode Island, read a brief paper on "Fire Prevention as Relating to the Preservation of Our Forests," before the National Convention of Insurance Commissioners at Swampscott, Mass., last week. While the subject is one not readily treated from an insurance standpoint, Mr. Wilbour undertook to show by numerous quotations the national danger lurking in forest destruction and some of the principal factors contributing to this waste. He urged constant agitation and education on preservation of forest from preventable destruction by fire.

H. H. Smith, trade adviser to the American Legation at Warsaw, Poland, is accompanying an agent of American business interests on a tour of Russian forest lands, according to word received in Washington. Leases, it is reported, are being negotiated by these interests, and by British concerns whose attention has been attracted by the thousands of acres of uncut timber available, particularly the enormous forest of Bialowieza. Advices from Berlin relating to forest concessions in Russia, report the approval by the Soviet Government of the formation of a huge American company to manufacture cellulose in Russia. Several members of the American corporation are expected in Russia soon to complete negotiations. The names of the Americans interested in the deal are being withheld for the present.

Available supplies of cut pulp wood within New York States may be seized by the State authorities and shipped to centers of population needing fuel. This step will be taken by the State Fuel Administrator if a serious shortage of other fuels should cause a condition where it will become necessary to all alleviate actual suffering. In such a contingency the wood cut for paper making would be requisitioned because the present supply of wood for fuel purposes is even more inadequate to meet the situation of winter fuel than coal.

The Pennsylvania Paper Products Company of Pittsburgh has secured a three-story building in Philadelphia in which it is installing machinery the manufacture of paper cans with tin tops and bottoms adapted for fluids and grease materials.

Among new paper products to be placed on the market is an umbrella made of waterproof paper, which is now being turned out in quantity by a New York paper specialty manufacturing concern. It is designed principally as a "one-trip" umbrella, but the makers claim that it will withstand repeated use. It is intended to sell at 25 cents retail. The umbrella is made of two cones of paper dyed black and waterproofed. A large cone forms the top of the umbrella and a smaller one takes the place of ribs in opening and closing. The two cones are mounted on a stick, the whole not weighing more than twelve ounces. The waterproofing is done by a secret process which allows no pores through which rain may pass. It is claimed that, facing the wind, the umbrella can withstand a 30-mile wind, while with the wind under it, a pressure of twenty miles an hour will be required to turn it inside out. Even then, it is claimed, it may be turned back. The article will also be produced in bright colors for beach use. During the past summer the umbrellas have been given a try-out at the Polo Grounds in New York, when rain interrupted ball games. The concessionaire at the ball park has been selling them to fans for fifty cents.

CONTINENTAL PRODUCTS ELECTS OFFICERS

At a meeting of The Continental Paper Products, Ltd., Ottawa, held last week, the following officers were elected: Herman Elsas, President; I Kuhe, Vice-President; Thos. Fynes, Treasurer; J. H. Wright, General Manager; H. A. Miller, Secretary & Sales Manager; J. A. Loa, Assistant Treasurer.

It is the intention of the new officers to extend the business with the installation of furthur machinery and manufacture goods that are not made at present and which will work in conjunction with their present lines.

of flax, hemp, jute, or phormium tows, even when containing tar. waterproofed or painted fabbrics, to dirty linters ,and other such materials generally considered undit for paper making. It gives clean white pulps. — A.P.-C.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-4. Process for the Preparation of Caustic Soda. Fr. pat. No. 514,509, SCHWEIZERISCHE SODAFABRIK Switzerland, April 26, 1920. **Industrie Chimique,** viii, 368, (Sept. 1921). A yield of 96-98 per cent of caustic soda can be obtained in a short time and in the form of a strong solution suitably emulsifying a mixture of milk of lime and of sodium carbonate solution. The milk of lime is brought to a very fine state of subdivision in the sodium carbonate solution, and the coating of carbonate which is former on the fine particles of lime is continually removed. Example: 2,000 kilos of carbonate are dissolved in 20 tons of cold water, giving a 12° Bé solution, and 200 kilos of quicklime are slaked in the solution. The temperature rises to 35° C., but only 60 to 65 per cent of the mixture reacts. The liquid is then circulated by means of a pump through a centrifugal mixer, and the reaction proceeds until the caustic soda content is about 85 g. per 1. and the specific gravity 13° Bé. The yield of caustic soda is 96 per cent, and the temperature of the liquor about 35° C. — A.P.-C.

F-0. Process of Pulp Manufacture. BADISCHE ANILIN UND SODA FABRIK. Ger. patent 331,950 Wood, straw, and other analogous materials are treated alternately with alkalies and with carbonic acid. The treatment is repeated one or more times. — I.G.

G. — Pulp Treatment and Drying. — Operation and Equipment

G-5. Pulp Thickener. C. H. ALLEN and GREAT NORTHERN PAPER CO. Can. patent 222,034, (Aug. 8, 1922). A filtering drum or (preferably) polygonal cross section rotates at about 12 revolutions per minutes within a casing practically filled with slush pulp, so that the drum is completely submerged. The casing is connected to a head box to maintain a constant head in the casing. A discharge opening in the casing is provided at one side of the drum, the clearance between the drum and casing being sufficient to let the layer of thickened pulp adhering to the screen pass by, the latter preventing the slush pulp from escaping.-A.P.-C.

G-8. Wet Machine. AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTAD. Ger. patent 355, 448. One or more pressure rolls having circumferential grooves work in conjunction with the cylinder mold to increase the dehydrating action of the latter. — I.G.

H. — Bleaching, Bleach Manufacturing and Equipment

H-5. The Different Methods of Bleaching Paper Pulp. RAFFAELE SANSONE. **Papeterie,** xliv, 158-162, (Feb. 25, 1922); 258-259, (March 25, 1922); 342-346, (April 25, 1922); 541-546, (June 25, 1922). A general description. — A.P.-C.

K. — Paper Maufacturing and Equipment

K-2, K-18. Recovering Fiber from Paper Board. M. F. WILLIAMS. U.S.A. Patent 1,417,961, May 30, 1922. Paper board and similar materials are shredded and treated with an air blast to recover the fiber. — I.G.

K-4. Process of Retting Plants for Obtaining Textile or Paper Making Fibers. Fr. patent No. 518,535, LOUIS PEUFAILLIT, France, Jan. 4, 1921. **Papier,** xxiv, 354, (Aug. 1921). Same as Can. patent No. 209,491, March 15, 1921. See this journal, xix, 1100, A-3, Oct. 27, 1921. — A.P.-C.

K-4. De-inking Waste Paper by Means of Bentonite. H. R. EYRICH and J. A. SCHREIBER, assignors to PAPER DEINKING CO. Can, patent 22,060, (Aug. 8, 1922). Also U.S.A. patent 1,421,195, June 27, 1922. The stock is treated (e.g., in a heater) with an alkali, in the presence of bentonite, washed thoroughly, and neutralized if necessary. It is then ready to be reconverted into paper. Two formulas given as examples are: 300 lb. bentonite, 200 lb. soda ash and 8000 gallons of water per ton of waste newsprint; and 150 lb. bentonite, 32 lb. soda ash, 20 lb. lime and 8000 gallons of water per ton of newsprint. — A.P.-C.

K-4. De-inking Old Newspapers by Means of Bentonite. SIDNEY D. WELLS, Forest Products Lab., Madison, Wis. **Paper,** xxx, No. 14, 7-10, (June 7, 1922); **Paper Trade J.** lxxiv, No. 25, 47-50, (June 22, 1922); **Paper Ind.** iv, 555-559, (July 1922); **Pulp and Paper,** xx, 599-602, (July 20, 1922). (Compare preceding abstract). A detailed account is given of experiments carried out on a semi-commercial scale, and of mill-scale tests carried out at the Watab Paper Co. The laboratory runs indicated that used news, book, or bond paper could be satisfactorily washed with the help of bentonite and used in making the same type of paper. The average loss was 9 to 10%. In the mill runs it was found that greatly improved results were obtained by using a specially constructed screen washer (described in detail) after the Jones four-drum washer. The proportions of chemicals finally adopted for continuous operation were: old newspaper stock 2,500 lb., bentonite 200 lb., soda ash 40 lb., hydrated lime 25 lb. — A.P.-C.

K-7. Process and Apparatus for the Manufacture of Paper thread, Either Alone or in Combination with Textile Fibers. Fr. patent No. 517, 743, E. CLAVIEZ, Germany, Dec. 21, 1920. **Papier,** xxiv, 314-315, (July 1921); **Monit. Papeterie Francaise,** lii, 644-645, (Oct. 15, 1921). The sheet of paper is passed through rolls which transform it into a sort of open-work paper fleece, which is then divided into strips in the usual way and the strips twisted either alone or with textile fibers. .— A.P.-C.

K-7. Beater. Fr. patent No. 522,794. E. and O. MASSART, France. **Papeterie** xliii, 789-90, (Sept. 10, 1921). The beater contains three rolls placed close together and working together. Each of them works with a bed plate (the middle roll may or may not have one), and the outside rolls turn in the same direction and the middle one in the opposite direction. The floor of the trough, bebsides having a slope from the backfall to the front of the first roll, is considerably inclined from the outside to the midfeather at the backfall, but this inclination gradually decreases, and may even be reversed in front of the first roll. When the beater first starts up the stock passes under the first roll, over the second, and under the third, and finally over the backfall. After a certain amount of pulp has been added to the beater, the consistency becomes such that part of the pulp instead of going over the backfall goes over and around the third roll, under the second, and over the firs, thus mixing the pulp very thoroughly and giving an intense beating effect.— A.P.-C.

K-7 Heating of Paper Stuff. Wochbl. Papierfabr., liii, 1625-1628, (1921). A dicussion of the causes of heating and of its influence on the sizing and strength of the paper. — I.G.

K-8. Coloring of Paper. H. DIERDORF. **Wochbl. Papierfabr.,** liii, 1624-1626, 1816-1819, (1921). A description of the methods of coloring all sorts of papers, the conditions under which coloring is carried out, the effects of different raw materials, the effect of sizing, etc. — I.G.

K-10. Process for Sizing with Water Glass. Fr. patent No. 518,701, MAX MULLER, Germany, **Monit. Papeterie Française,** lii, 542-543, (Sept. 1, 1921). One part of animal size is dissolved in 6 parts of water, and while still hot is mixed with a solution of one part 38° Bé waterglass in 8 parts of water. After cooling, the still fluid mixture is treated with a precipitant, e. g., aluminium sulphate, with vigorous stirring until part or the whole of the size-waterglass combination has been precipitated. It is preferable not to precipitate completely, and at any rate care must be taken to avoid excess of sulphate of alumina. The size suspension is then added to the stock, followed by sulphate of alumina in the usual manner until slight acid reaction. For the preparation of a stable sizing emulsion it is advisable to add antiseptic to the solution before the precipitation with the alum. It is also advisable to add loading material, coloring matter, etc., before precipitating, so as to obtain a complete fixing and even distribution of the materials on the pulp.— A.P.-C.

K-12. Calculating the Efficiency of Dryers. F. STRAUCH. **Papierfabr.,** xx, Fest u. Auslandheft, 56-66, (1922). A detailed mathematical discussion of the method of determining the steam consumption per kilo of paper. The calculations, which are very extensive, are arranged in tabular form. Curves are also given. — I.G.

K-12. Method of Controlling the Draining of water through a paper Machine Wire. J. R. BUCHANAN. Can. patent 222,068, Aug. 8, 1922. To prevent too rapid draining of the water when the stock first comes on the wire, an auxiliary wire is provided under a portion of the main wire near the breast roll. The effect is the same as if the mesh of the wire were finer near the the breast roll than at the suction boxes. — A.P.-C.

K-12. Rubber Jacketed Press Rolls. Mon Papeterie Française, liii, 344-345, (July 15, 1922). Brief description of the method of making rubber jacketed press rolls. — A.P.-C.

K-12. Improvement to Paper Machine Suction Boxes. Fr. patent No. 516,329 J. E. McLAUGHLIN and J. O. HAMEL, Canada, **Monit Papeterie Française,** lii 507-509, (Aug. 15, 1921). Same as Can. patent No. 198,391, March 23, 1920. — A.P.-C.

K-12. Method of Felting Fibers on Paper Machines. J. W. BRASSINGTON, assignor to PORT ARTHUR SHIPBUILDING CO. Can. patent 222,005, Aug. 8, 1922. The wire passes around a suction roll partly immersed in a vat containing pulp and equipped with a suitable number of agitators under the roll. The suction box in the roll can be turned either directly downward towards the agitators or at any suitable angle, according to the character and thickness of sheet desired. Means are provided for ajusting the width of the sheet. It is claimed that the strength in the cross direction is practically equal to that in the machine direction. — A.P.-C.

K-12. Paper Machine Press. R. E. WAGNER assignor to AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTADS. Can. patent 221,949. Aug. 8, 1922. The rolls are provided with circumferential grooves and suction is applied by a suitable device adjacent to the surface of one or both rolls and projecting into the angle between the roll and the web. — A.P.-C.

K-14. Machine for Picking up and Folding Sheets of Paper. Fr. patent No. 517,648, R. BRAUNSTEIN, Seine, France, Dec. 20, 1920. **Papier,** xxiv, 312, (July 1921). Two hollow cylinders, each having a row of holes along a line parallel to their axes, are geared so as to turn at the same speed in the opposite directions. They can be connected alternately with a vacum pump and with the atmosphere. The supply of paper sheets is placed above the cylinder. When the holes come opposite the paper, the inside of the cylinders is connected with the suction pump, so that the sheet is drawn in between the cylinders and folded. The cylinders are thn automatically connected with the atmosphere, so that the folded sheets fall into a suitable receptable underneath. — A.P.-C.

K-14. Scraper for Paper Calenders. Fr. patent No. 519,895, VICKERY'S LTD., England, Feb. 3, 1921, **Papier,** xxiv, 355-357. (Aug. 1921); **Monit. Papeterie Française,** lii, 615-616, (Oct. 1, 1921). Same as Can. patent No. 193,339, Oct. 21 1919. — A.P.-C.

K-16. Packing Material from Cellular Paper. Fr. patent No. 518,098, EMIL KLUS and ERNST KLUS, Austria, Dec. 24, 1920. **Papier,** xxiv, 315, (July 1921). Cellular paper is opened out and then pressure is applied in a direction parallel to the axis of the cells. — A.P.-C.

K-21. Asphalt Shingle Roofing and Machine for Making Same. J. T. SULLIVAN. Can. patent 221,937, Aug. 8, 1922. In surfacing the roofing with crushed stone, etc., uncovered lines are left on the saturated felt. The finished roofing is not cut into separate shingles but is applied in strips, the lines giving the same effect as separate shingles. — A.P.-C.

K-23. Translucent Paper. F. W. HOCHSTTER. U.S.A. Patent 1,419,379, June 13, 1922. Paper is rendered translucent by treatment with a composition containing 10 parts of linseed oil or any other similar drying oil, 3 parts of bleached shellac, and 20 parts of absolute alcohol. — I.G.

K-23, L-4. Rendering Paper and Paper Containers Greaseproof. W. L. WRIGHT, assignor to SEALRIGHT CO. U.S.A. Patent 1,417,708, May 30, 1922. The paper material is coated by means of a nearly saturated sugar solution containing an appropriate amount of a soluble adhesive. — I G.

R — General

R-0. Accuracy Required in Passing from Ream Weight to Weight per Unit Area and Conversely. H. MICOUD. **Mon papeterie Française,** liii, 243-246, (May 15, 1922). Owing to conditions inherent to the process of paper making, to which are due the allowances recognized by all paper trade codes, the variations in weigth which are bound to occur render absolutely meaningless the use of a second decimal in expressing ream weight. For small sizes and light weights, the first decimal may be retained; but for the larger sizes and heavier weigths the significance of the units or even tens digits may be questionable. The prescribed ream weight is really only the average of limiting values between which the actual weight must fall. By applying the theory of ''dispersion'', used in ballistics, the author shows that in the great majority of cases the actual values fall close to this mean, while in relatively few cases does it come very near the limits. — A.P.-C.

R-0. Relation Between Ream Weight per Unit Area. H. MICOUD. **Mon Papeterie Française,** liii, 149-150, 168-170, (March 15 and April 1, 1922). The author briefly discussed the tables and special calculators devised for passing directly from ream weight to weight per unit area, and vice versa, and shows that the simplest, quickest and most convenient method is the use of the slide-rule. — A.P.-C.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, Sept, 19.—In reviewing the pulp and paper situation, it is well to bear in mind the general commercial outlook, which has a very strong bearing on the demand for two commodities in which we are specially interested. Although the position in Europe is discouraging, the recovery in Canada and the United States has made great progress, and after all that is the main consideration so far as pulp and paper production is concerned. With a good harvest assured, the prospects are of a satisfactory character. General business is improving, and the pulp and paper industries will certainly share in the general upward movement.

It will be remembered that the McCumber tariff proposals were a distinct menace to Canadian pulp and paper exports to the United States, not only by reason of the duties imposed, but because of the clauses which allowed additional taxes in the case of any country restricting the importation of pulpwood and its products into the United States. The clauses were to be operative at the discretion of the President, and would have affected Canada owing to the embargo on the export of pulpwood from the Crownlands. The defeat of the proposed duties as been followed by the withdrawal of the retaliatory clauses, leaving the Canadian industry in the same position as it was prior to the introduction of the new tariff legislation.

During the past week the orders obtained by jobbers have been fairly good, and they in turn have placed business a little more freely and in larger quantities. In one or two districts, the mills are behind in deliveries. Prices are holding very firm and it is significant that one mill has notified that prices of wrapping papers are withdrawn, and that orders will only be taken at the market price on the date of shipment.

The demand for book papers is good, while tissues and toilets are meeting with a very ready sale. The activity in box-board plants is reflected in the large orders for boards. The manufacturers of these lines, which recently put an increase of 10 per cent. into force, have now withdrawn their price lists, which evidently is a forerunner of another advance. Meantime the mills are only taking spot orders, thus protecting themselves. The prices of raw materials entering into board have risen, this being one justification for the firmer quotations for the manufacured articles.

Newsprint continues in good demand. The United States publishers continue to put out large editions, with the result that consumption is gradually increasing, and is likely to do so—though it may be very slow—until the end of the year, at any rate. On two or three occasinons we have pointed out the possibility of an advance in price for next year, this depends upon condition. The mills are anxious to keep the machines in full operation, and are alive to the possibility of a considerable reduction in demand should the price be substantially increased. The chances are that contracts for 1923 will be on the basis of $75.00 per ton, and increase of $5.00. A record output for this year may be confidently looked for.

The pulp market is again firming up. The demand for groundwood is better. Kraft pulp is also on the upgrade, with sales at $68.00. There is a sustained call for bleached pulp, with a tendency towards higher values, while unbleached grades are in very fair request.

Toronto Topics

Business here is inclined to be looking up. One of our informants who has been persistently pessimistic for three months admits improvement. Collections are still poor but probably will pick up as crops are marketed. Stocks are low and getting lower and some houses that have been standing off find themselves compelled to replace, though the wholesaler is likely to forget what carload lots figure out at. Individual orders are only in replacement quantities.

The stationery trade, especially in smaller cities and towns has evidently been holding very small stocks as this year's school supply business has been on a better basis than for several years past.

Another instance of low stock conditions is that of the paper stock market which became very firm about a week ago on demand from Northern United States mills, then weakened and almost immediately firmed up again, clearly indicating insufficient material in circulation. Prices went beyond the economic limit for Canadian mills and the result is, that quotations for Canadian boards are still only nominal.

NEW YORK MARKETS

New York, September 16—(Special Correspondence)—With the railroad strike practically over, sentiment in the paper trade in favor of a further increase in business is growing. There is no doubt that the two country-wide strike—that of the railroad shopmen and the coal miners—have placed a decided damper on trade activity during the past few weeks not only in paper and board but in virtually all other commodities, and now that these two difficulties have been smoothed over, it is expected that the improvement in manufacturing and business conditions that was so marked prior to the declaration of these strikes will resume.

The paper industry is exhibiting numerous signs of health and broadening activity. Reports from mill centres are most encouraging, telling as they do of manufacturers finding it necessary to increase operations in their plants to take care of the expanding demand for paper of nearly all kinds. It is stated on high authority of paper mills in the States have enough orders on their books to keep them running at close to capacity for a month or longer, and new business is developing at a rate regarding which a general expression of satisfaction is heard. Shortage of coal is holding up manufacturing operations at a great number of mills; for example, it is said that board mills in New Jersey are at present working only three to four days a week owing to the difficulty in securing fuel. With the coal miners' strike settled, this situation should soon show much improvement, however.

Strength in the newsprint market is easily explained by a glance at any of the daily newspapers in the large cities of the country. One of the prominent New York morning newspapers this week printed an issue of 44 pages on three consecutive days, which probably establishes a record. Latest available figures show that conmany expecting higher prices to prevail before the year is out.

CHEMICAL PULP—A firm tone marks quotations on chemical wood pulp and everything seems to foreshadow higher market levels. Demand is expanding, as is usually the case at this time of the year, and prices on pulp at primary sources in Europe are rising, thus making importers here more cautious about entering selling engagements and prompting them to name higher prices when negotiating with paper mills on orders. Sulphite of all kinds is moving freely. Bleached sulphite is quoted at from 4.25 cents a pound upward at producing centres for No. 1 domestic, and 4 to 4.25 cents ex dock for No. 1 imported bleached sulphite, with importers in New York said to be mostly asking close to 4.25 cents for spot pulp. Kraft also is firming under an increasing demand from consuming quarters. Swedish kraft is held at about 2.60 cents per pound on the dock at this port, and higher than this price is quoted in some quarters. No. 1 domestic kraft is quoted at 2. 75 to 3 cents a pound at producing mills.

RAGS—Increasing demand for roofing stock is the prevailing feature of the papermaking rag market. If anything, felt manufacturers have been more desirous of rags this week than heretofore, and sales have been recorded at new high prices for the present upward movement. Domestic No. 1 roofing stock has sold at 1.45 cents a pound f.o.b. New York, and No. 2 packing at 1.35 cents, while foreign dark cottons have brought between 1.30 and 1.35 cents ex dock New York. Even at these prices dealers appear to be careful about making commitments, asserting that they are experiencing much difficulty in locating normal amounts of rags at collection sources, while importers assert they can no longer purchase roofing rags in Europe to sell at 1.30 cents or even 1.35 cents on the dock here and show them a profit.

New cuttings are firm and moving in fairly large amounts. New No. 1 white shirt cuttings are quoted at 11.50 to 11.75 cents a pound at dealers' shipping points, new light silesias at 6.75 cents, No. 1 washables at 4 cents, unbleached muslins at 10.50 cents and blue overall cuttings at 6 cents. Old whites are quotably steady and are meeting with moderate demand.

PAPER STOCK—After having shown a little easier tone earlier in the week, waste paper has again strengthened; prices have improved their position to some slight extent, and indications are the market is back on the move upward. Books and magazines continue to be about the strongest item in the trade, and mills are reported paying 2.60 to 2.75 cents a pound f.o.b. New York for No. 1 heavy magazines, and 2.20 cents for mixed books. Shavings are firm at between 4.25 and 4.50 cents a pound for No. 1 hard white, and around 3.85 cents for No. 1 soft white shavings. Old kraft paper is steady at around 2.35 cents per pound New York for No. 1 packing, and white blank news cuttings are bringing 2.15 cents f.o.b. this city. Folded newspapers are selling to board mills as an average of 1.20 cents a pound New York, and No. 1 mixed paper at 1.05 cents.

OLD ROPE AND BAGGING—Business of fairly steady character is current in old rope with market prices ranging around 6 cents a pound for No. 1 domestic manila rope at dealers' shipping points, and with foreign rope available at relatively cheaper prices, about 5.50 cents being quoted on the latter ex dock New York. Old bagging is quiet except for a moderately large movement of stock to roofing mills at about 1.10 cents a pound at shipping points. No. 1 scrap bagging is quoted at from 2.25 cents upward.

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

sumption of newsprint in the United States is setting a new high record this year, and should approximate 2,300,000 tons. In 1920, the previous banner year, roughly 2,100,000 tons were used. This country, in 1920, a week ago on demand from Northern United States a normal year, produced in round figures 1,500,000 tons of print paper and Canada in the same year produced 883,000 tons. Canada uses between 100,000 and 125,000 tons of paper at home, and the balance, or about 80 per cent. of her normal output comes to this country. Canadian mills have been taking the burden of increased demand; American production in the past five years having varied but slightly.

Newsprint consumption in the first seven months of this year in the United States totalled 1,154,943 tons, compared with 1,019,601 tons in 1921 and 1,029,597 tons in 1920. While advertising for the same period was 2 per cent. ahead of that last year, heavy consumption can be attributed chiefly to many circulation compaigns under way by the metropolitan dailies. Better business conditions in the coming fall and winter are expected to increase advertising, so that a continuation of the present rate of consumption seems likely.

Probably not in a long time has any division of the paper industry, with the possible exception of newsprint manufacture, showed such activity as is at present prevailing in the box board field. Demand for board of all descriptions is keen and of heavy volume. Paper box manufacturers are buying in large amounts against both immediate and forward requirements partly because they are using board in big tonnage and therefore are in want of large supplies and partly because they feel they may have to pay higher prices later in the year. Board mills with few exceptions have months of business on their books; so active is the demand that manufacturers in a majority of cases have withdrawn all quotations and are accepting additional orders only from regular customers. Prices on board have advanced at a rapid rate. Plain chip is now quoted at $60 a ton f.o.b. New York, and some difficulty is experienced by buyers in getting supplies at this price basis while news board is quoted at $62.50 to $65 a ton. Straw board, container board and folding box boards are reported in equally as good demand as plain box boards, with prices all down the line showing a steady upward trend.

Book papers are in more demand than in some time. Publishers are buying with greater freedom, and conditions are such that most manufacturers have withdrawn prices on all grades of book paper, evidently being satisfied to work on orders in hand before accepting further business. There is a strong upward tendency in book paper quotations. Most mills want at least 6 cents per pound for machine finished book, and from 9 cents upward for coated book paper. Fine papers are firm in price and moving in a consistent way. There is also considerable trade activity in coarse papers, jobbers and merchants laying in stocks of wrapping paper in preparation for the pre-holiday season.

GROUND WOOD—While no further change of note has occurred in ground wood prices, quotations display a strengthening tendency. Demand for mechanical pulp is good and is gradually broadening. Newsprint mills are absorbing pulp in steady tonnage and there is also a brisk call for supplies from board plants and other consumers. Domestic grinders are quoting around $32 to $33 a ton f.o.b. producing mills for prime spruce ground wood for prompt shipment, and sales of Canadian ground wood brought down to New York on schooners at $34 a ton f.o.b. this city have been reported. Sentiment in the trade regarding ground wood is bullish,

THE QUALIFICATIONS OF A FORESTER

(Dearborn Independent)

Good foresters are not born, they are made. Forestry is the right profession for the right man. To qualify as a forester, with intentions of making forestry a profession, a man must first "have it in him."

Next, the technical side, requiring a university education, must be acquired. A man surviving these first and fundamental ordeals has yet to add experience to his list before he is a qualified forester. The experience should last about three years, most of this time to be spent in the forests, referred to as the "field." You can readily see that adopting forestry as a profession is, therefore, quite a task. It would be useless for a man, lacking the inclination for this work, to attempt to become a forester.

In contemplating what we are to derive from this life, I am sure you agree with me that before the lure of money, comes health and happiness. Fortunes are not made and lost in a day in protecting our forests. As one man put it: "You may say that no forester ever died wealthy." That does not mean that it is a struggling existence, however. Good salaries are paid to competent foresters. It affords a comfortable living and above all other inducements, it offers outdoor recreation, health and happiness.

Second only to agriculture, our forests are our greatest natural resource. In adopting forestry as a profession, therefore, the work of protecting our forests of a livelihood. A person must, as has been said, "have carries with it as much of a civil obligation as a means it in him."

WANTS FOREST STATION FOR NEW ENGLAND

New York, Sept. 18—The Woodlands Section of the American Paper and Pulp Association, the department devoted to the practice of forestry, has asked governmental authorities to secure the establishment of a forest experiment station in New Hampshire, to study problems relating to the growing of pulp wood for the paper industry, as well as timber for building construction.

The New England station, it is believed, would be able, through investigations by forest service experts to develop information of the greatest value to the paper companies which are endeavoring to practice forestry on their cut over lands, as well as to protect the timber now standing from devastation. The Woodlands Section believes. New Hampshire would be the best field, because its forest lands is typical of the pulp wood forests of Maine, New York, New Hampshire and Vermont, the four states which a New England laboratory would serve, and because there is already a national forest in the White Mountains.

In taking this action, the Woodlands Section, which is composed of foresters and technical logging men of the paper companies, urges that the government give the aid of its technical research men to the study of problems in which the company foresters, managing private forests on a commercial scale are interested, and to coordinate the investigations of these private foresters.

JELLICOE TIMBER LIMIT

Port Arthur, September 19.—Kust Justin contractor Port Arthur is the successful bidder for the Jellicoe Timber Limit, comprising seventy-seven square miles of territory at a point east of Jellicoe station, on the Canadian National. Three hundred men will be employed there this winter taking out pulpwood and ties.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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-:- EDITORIAL -:-

FIRES KEEP BURNING THE HOME

A popular slogan during the War was, "Keep the home fires burning." A transposition of these words, as in our heading, indicates a condition which has been a growing menace to the prosperity of our country. The loss of property and amount of misery caused by fire should make us, as a nation, hang our heads with shame. Insurance rates have increased tremendously, because carelessness and irresponsibility have become more and more common. No doubt this is partly due to the idea that insurance covers all losses and the person prone to be careless says: "Oh well, its insured." With such an attitude, there is not likely to be much cleaning up of premises, particularly if they belong to some one else, nor the elimination of fire hazards in commercial buildings and industrial plants. The people who are responsible, because if their irresponsibility, for Canada's enormous, and increasing, loss by fire, do not realize that they are the ultimate and individual losers.

The fire loss has to be paid for and the cost of fires must be distributed. Whether it be peanuts or pulp wood, the destruction of part of the supply automatically increases the value of what is left. Not only is loss of material a burden on the individual, but the loss of work—of earning power, and the loss of life are such serious drains on our nation that further drifting with the stream of indifference and carelessness will surely bring us to disaster. For indifference and carelessness in this respect is indicative of our national habits of thought and action. Stability is largely a matter of personal responsibility. Education of the public to the gravity of the situation is important and imperative. The institution of Fire Prevention week, Oct. 2-9 is a movement that should have the enthusiastic support of every Canadian.

Apropos of this matter, it is worthwhile to quote a report and address by Mr. J. Grove Smith, Dominion Fire Commissioner, his subject being "Fire Prevention". This is a subject, he said, especially suited to business men, since the loss by fire in the Dominion for 1921 was estimated at over $45,000,000, or over $5 per capita, which did not include the loss from forest fires which were quite incalculable. These figures increase when the $62,000,000 expended last year on fire insurance policies and also the maintenance of fire brigades is taken into account.

Loss by fire in Europe, he said, was considerably less than in Canada, since the laws for the prevention of fire, coupled with the building statutes practically enforced carefulness, the losses being estimated at about 33 cents per capita. Carelessness in construction was an inducement to fire and more stringent laws were required to remedy this. Giving some local statistics, the speaker declared that the fire losses in Montreal for 1919, were $1,584,000; $4,900,000 for 1920, and $3,000,000 for 1921.

The loss of life was also to be considered, since about 400 persons perished in fires last year, which fact alone, said the speaker, should awaken the public to a greater appreciation of this great menace. Many persons who had spent nearly a lifetime building up a business were often ruined by fire—a loss which the insurance money frequently could not entirely compensate. While the fire losses in the Dominion are so great, there can be no hope for a reduction in the cost of living, since business men find it necessary to insure their goods while in the factory, in transportation, in the warehouses, and during other processes of business, and for this the public ultimately has to pay.

Think of the benefit that would come to Canada, if that $5 per capita were invested, say in life insurance!

THE ARISTOCRACY OF BRAINS

In a country where individuals and institutions are as democratic as in Canada it may seem like heresy even to suggest the existence of an aristocracy of any sort. There is, however, without question and without prejudice, such a thing as "an aristocracy of brains", to use an expression of E. M. Hopkins, President of Dartmouth College.

There are several definitions of aristocracy and of aristocrat. Some of these are now obsolete, but there remains the presently appropriate conception that aristocracy means the leaders of a state, and aristocrat means a person possessing qualities supposed to characterize the nobility. These definitions do not exactly limit the meaning of leaders. The word may be taken to mean the intellectual, religious, political, or even revolutionary leaders. Further, the idea of nobility is not prescribed. No matter how democratic a people may become, or an individual may feel, the concept of nobility remains with a certain stability enjoyed by few words in our language. Nobility is a characteristic that is never below par. The aristocrat, the true nobleman, may be as humble, friendly, and easy of approach as any other person, in fact, is usually more so, but he has characteristics which clearly distinguish him among his fellows.

An almost universal attribute of our leaders is brains. There is a distinction, a power, which comes from the possession of a working brain that draws the brain users together. The classification of the men who sat about the stove in the general store of a country town in Maine is apt here. One of the barrel-warmers said there were two kinds of people who sat round the store, "those who sit and think and those who just sit." So it is everywhere in life. Some have brains and use them not, and some, possibly with a poorer initial mental equipment, so use and develop what they have that they qualify and belong to the aristocracy of brains.

It is the development of brain power that counts. This desire for growth may, or may not, be accompanied by a desire for material advancement, nor even preparation for greater responsibilities. But the development of one's brain, whether by study of one's own job or by reading on broader lines is bound to bring greater satisfaction with life. We know people who are perfectly miserable when a severe storm prevents gadding about or attending a dance or the movies — others are glad to sit down with a book, to read or to study, while time goes by unheeded and thoughts are stored away for future contemplation and use. In conversation too, these two classes are distinct and separate. One talks of nothings and listens impatiently; the other talks soundly and listens with the delight that means acquisition of something of value.

There *is* an aristocracy of brains; it includes those who use them and excludes those who don't. By use we mean put to work with intelligent direction and with a definite purpose. We once heard a teacher remark that he had already explained a point several times to the class and came to the conclusion that the information had gone in one ear and out the other, and that in some cases there was *nothing between them*. Now we all have something between our ears. Let us determine to put it to use; let us spend our frequently wasted spare time this winter in the study of something that will develop our brain power and put us on the road to be leaders.

YOUR OWN OPINION

For two years Canadians have been wondering just how high a permanent tariff wall the present administration at Washington would raise against the products of the Dominion. Since the Emergency Tariff Bill was introduced the matter has been continually before the United States Congress. The original Fordney Bill has met many vicissitudes and has been rubbed, cut, hammered and extended at the hands of the law makers till it has finally emerged with the signature of President Harding.

Elsewhere in this issue we publish the full text of the measure as far as it has immediate effect on our pulp and paper industries. These provisions are in many respects, milder than the treatment originally proposed. That is gratifying.

We shall not presume or attempt to state the opinion of the Canadian pulp and paper industry on this matter.

In the *Pulp and Paper Magazine* for Sept. 7th, the translation of the article entitled "The coloring of Paper on the Paper Machine" should have been credited to Mr. Ismar Ginsberg.

M. GEORGE McKEE HONORED

On the occasion of his resignation as General Manager of the Donnacona Paper Co. Mr. George McKee was the recipient of several tokens of esteem from his organization. The office staff gave a farewell dinner in Mr. McKee's honor at the Chateau Frontenac on the 21st. He was presented with a memento of the staff's good wishes and appreciation. The men in the mill included Mrs. McKee in their expression of regard, as both were presented with a silver service, with due and proper ceremony. Mr. McKee has, as yet, made no definite plans.

A PRETTY WEDDING AT BEAUHARNOIS

The wedding took place on Wednesday evening last, at the residence of Mr. and Mrs. David Crabtree, Beauharnois, Que., of their eldest daughter, Miss Elsie Irene Crabtree, to Mr. George Bidwell, son of Mrs. L. Bidwell, of Cheshire, England. The Rev. Mr. Anderson performed the wedding ceremony. The bride was attended by Miss Bertha Parkinson, as maid of honor, and Miss Bernice Crabtree, sister of the bride, as bridesmaid. Mr. Harry Costigan acted as best man. Among the out of town guests were the bride's grandparents Mr. and Mrs Edwin Crabtree, also Mr. and Mrs. Walter Crabtree, Mr. and Mrs. Smart, Mrs. T. A. Copping, of Joliette, Que., Mr. and Mrs. Kay Crabtree of Crabtree Mills. On their return Mr. and Mrs. Bidwell will reside at Crabtree Mills, Quebec.

A COURSE IN INDUSTRIAL METALLOGRAPHY

Under the auspices of the department of Metallurgy at McGill University an extension course in Metallography will be given as in previous years, by Messrs. Harold. J. Roast F. C. S., F. C. I. C., and Charles F. Pascoe F. C. I. C. The student need have no previous knowledge of the subject.

The course consists of fifteen periods, held on Monday nights at the Chemistry and Mining building McGill University, commencing on Monday November the sixth at 8 P. M.

Application should be made to either of the lecturers. their address being McGill University, department of Metallurgy.

The fee for the course is $20.00 payable to the Bursar.

In as much as only twelve members can be accommodated at one time students will be enrolled in order of their applications.

In past years the class has been composed of mechanics, engineers, chemists, and those desiring a winter hobby, or whose business brings them in contact with metals and who desire to have more knowledge of their composition. NO PREVIOUS KNOWLEDGE IS ASSUMED and the course is essentially practical from first to last.

If any students from a previous year desire to continue their work provision will be made for an advanced course if sufficient members are obtained.

Ferrous and non-ferrous metals are dealt with equally, training being given in preparing them for examination under the microscope and finally photographing the various structures developed.

The United States Tariff Act of 1922

Through the courtesy of the News Print Service Bureau, the *Pulp and Paper Magazine* presents in this issue the United States Tariff in its final form, in so far as it relates to the pulp and paper industry.

The Conference Committee report to the House on September 12 was ordered back to conference on September 13 because of objection to the dye and potash sections and was finally passed by the House on September 15.

The Senate passed the bill in final form on September 19 and the President signed it on September 21, the act except where otherwise specifically provided to take effect at midnight the same day.

The sections covering paper, pulp and related products together with the provisions for administrative adjustments are as follows:

FREE LIST

The Free List includes:

News Print Paper

Par. 1672. Standard news print paper.

Wood Pulp

Par. 1616. Mechanically ground wood pulp, chemical wood pulp, unbleached or bleached.

Rag Pulp

Par. 1651. Rag pulp; paper stock, crude, of every description, including all grasses, fibers, rags, waste, including jute, hemp and flax waste, shavings, clippings, old paper, rope ends, waste rope, and waste bagging, and all other waste not specially provided for, including old gunny cloth, and old gunny bags, used chiefly for paper making, and no longer suitable for bags.

Logs, Bolts, Etc.

Par. 1660. Shingles.

Par. 1700. Wood: Logs; timber, round, unmanufactured, hewn, sided or squared otherwise than by sawing; pulpwoods; round timber used for spars or in building wharves; firewood, handle bolts, shingle bolts; and gun blocks for gunstocks, rough hewn or sawed or planed on one side; sawed boards, planks, deals, and other lumber not further manufactured than sawed, planed, and tongued and grooved; clapboards, laths, ship timber; all of the foregoing not specially provided for: Provided, That if there is imported into the United States any of the foregoing lumber, planed on one or more sides and tongued and grooved, manufactured in or exported from any country, dependency, province, or other subdivision or government which imposes a duty upon such lumber exported from the United States, the President may enter into negotiations with such country, dependency, province, or other subdivision of government to secure the removal of such duty, and if such duty is not removed he may by proclamation declare such failure of negotiations, and in such proclamation shall state the facts upon which his action is taken together with the rates imposed, and make declaration that like and equal rates shall be forthwith imposed as hereinafter provided; whereupon, and until such duty is removed, there shall be levied, collected, and paid upon such lumber, when imported directly or indirectly from such country, dependency, province, or other subdivision of government, a duty equal to the duty imposed by such country, dependency, province, or other subdivision of government upon such lumber imported from the United States.

Par. 1701. Paving posts, railroad ties, and telephone, trolley, electric-light, and telegraph poles of cedar or other woods.

Par. 1702. Pickets, palings, hoops, and staves of wood of all kinds.

Par. 1703. Woods: Sticks of partridge, hair wood, pimento, orange, myrtle, bamboo, rattan, india malacca joints, and other woods not specially provided for, in the rough, or not further advanced than cut into lengths suitable for sticks for umbrellas, parasols, sunshades, whips, fishing rods, or walking canes.

DUTIABLE LIST

The provisions for duties upon paper and paper products and articles made of wood are:

Schedule 13.—Papers and Books

Par. 1301. Printing paper, not specially provided for, one-fourth of 1 cent per pound and 10 per centum ad valorem: Provided, That if any country, dependency, province, or other subdivision of government shall forbid or restrict in any way the exportation of (whether by law, order, regulation, contractual relation, or otherwise, directly or indirectly), or impose any export duty, export license fee, or other export charge of any kind whatsoever (whether in the form of additional charge or license fee or otherwise) upon printing paper, wood pulp, or wood for use in the manufacture or wood pulp, the President may enter into negotiations with such country, dependency, province, or other subdivision of government to secure the removal of such prohibition, restriction, export duty, or other export charge, and if it is not removed he may, by proclamation, declare such failure of negotiations, setting forth the facts. Thereupon, and until such prohibition, restriction, export duty, or other export charge, and if it is not removed he may, by proclamation, declare such failure or negotiations, setting forth the facts. Thereupon, and until such prohibition, restriction, export duty, or other export charge is removed, there shall be imposed upon printing paper provided for in this paragraph when imported either directly or indirectly from such country, dependency, province, or other subdivision of government, an additional duty of 10 per centum ad valorem and in addition thereto an amount equal to the highest export duty or other export charge imposed by such country, dependency, province, or other subdivision of government, upon either an equal amount of printing paper or an amount of wood pulp or wood for use in the manufacture of wood pulp necessary to manufacture such printing paper.

Par. 1302. Paper board, wallboard, and pulpboard, including cardboard, and leather board or compress leather, not laminated, glazed, coated, lined, embossed, printed, decorated or ornamented in any manner, nor cut into shapes for boxes or other articles and not specially provided for, 10 per centum ad valorem; pulp board in rolls for use in the manufacture of wallboard, 5 per centum ad valorem: Provided, That for the purposes of this Act any of the foregoing less than nine one-thousandths of an inch in thickness shall be deemed to be paper; sheathing paper, roofing paper, deadening felt, sheathing felt, roofing felt or felt roofing, whether or not saturated or coated, 10 per centum ad valorem. If any country, dependency, province or other subdivision of government imposes a duty on any article specified in this paragraph, when imported from the United States, in excess of the duty herein provided, there shall be imposed upon such article, when imported either directly or indirectly from such country, dependency, province or other subdivision of government, a duty equal to that imposed by such country, dependency, province, or other subdivision of government on such article imported from the United States.

Par. 1302. Filter masse or filter stock, composed wholly or in part of wood pulp, wood flour, cotton or other vegetable fibre, 20 per centum ad valorem; indurated fiber ware, masks composed of paper, pulp or papier-mache, manufacturers of pulp; and manufacturers of papier-mache, not specially provided for 25 per centum ad valorem.

Par. 1304. Papers commonly known as tissue paper, stereotype paper, and copying paper, india and bible paper, condenser paper, carbon paper, coated or uncoated, bibulous paper, pottery paper, tissue paper for waxing and all paper similar to any of the foregoing not specially provided for, colored or uncolored, white or printed, weighing not over six pounds to the ream of four hundred and eighty sheets on the basis of twenty by thirty inches, and whether in reams or any other form, 6 cents per pound and 15 per centum ad valorem; weighing over six pounds and less than ten pounds to the ream, 5 cents per pound and 15 per centum ad valorem; india and bible paper weighing ten pounds or more and less than eighteen pounds to the ream, 4 cents per pound and 15 per centum ad valorem; crepe paper, 6 cents per pound and 15 per centum ad valorem: Provided, That no article composed wholly or in chief value of one or more of the papers specified in this paragraph shall pay a less rate of duty than that imposed upon the component paper of chief value of which such article is made.

Par. 1305. Papers with coated surface or surfaces, not specially provided for, 5 cents per pound and 15 per centum ad valorem; papers with coated surface or surfaces, embossed or printed otherwise than lithographically, and papers wholly or partly covered with metal or its solutions (except as herein provided), or with gelatin, linseed oil cement, or flock, 5 cents per pound and 15 per centum ad valorem; papers, including wrapping paper, with the surface or surfaces wholly or partly decorated or covered with a design, fancy effect, pattern, or character, except designs, fancy effects, patterns, or characters produced on a paper machine without attachments, or produced by lithographic process, 4½ cents per pound, and in addition thereto, if embossed, or printed otherwise than lithographically, or wholly or partly covered with metal or its solutions, or with gelatin or flock, 17 per centum ad valorem: Provided, That paper wholly or partly covered with metal or its solutions, and weighing less than fifteen pounds per ream of four hundred and eighty sheets, on the basis of twenty by twenty-five inches, shall pay a duty of 5 cents per pound and 17 per centum ad valorem; gummed papers, not specially provided for, including simplex decalcomania paper not printed, 5 cents per pound; cloth-lined or reinforced paper, 5 cents per pound and 17 per centum ad valorem; papers with paraffin or wax-coated surface or surfaces, vegetable parchment paper, grease-proof and imitation parchment papers which have been supercladendered and rendered transparent or partially so, by whatever name known, all other grease-proof and imitation parchment paper, not specially provided for, by whatever name known, 3 cents per pound and 15 per centum ad valorem; bags, printed matter other than lithographic, and all other articles, composed wholly or in chief value of any of the foregoing papers, not specially provided for, and all boxes of paper or papier-mache or wood covered or lined with any of the foregoing papers or lithographed paper, or covered or lined with cotton or other vegetable fiber, 5 cents per pound and 20 per centum ad valorem; plain basic paper for albumenizing, sensitizing, baryta coating, or for photographic processes by using solar or artificial light, 3 cents per pound and 15 per centum ad valorem; albumenized or sensitized paper or paper otherwise surface coated for photographic purposes, 3 cents per pound and 20 per centum ad valorem; wet transfer paper or paper prepared wholly with glycerin or glycerin combined with other materials, containing the imprints taken from lithographic plates or stones, 65 per centum ad valorem.

Pa. 1306. Pictures, calendars, cards, labels, flaps, cigar bands, placards, and other articles, composed wholly or in chief value of paper lithographically printed in whole or in part from stone, gelatin, metal, or other material (except boxes, views of American scenery or objects, and music, and illustrations when forming part of a periodical or newspaper, or of bound or unbound books, accompanying the same), not specially provided for, shall pay duty at the following rates: Labels and flaps, printed in less than eight colors (bronze printing to be counted as two colors), but not printed in whole or in part in metal leaf, 25 cents per pound; cigar bands of the same number of colors and printings, 35 cents per pound; labels and flaps printed in eight or more colors (bronze printing to be counted as two colors), but not printed in whole or in part in metal leaf, 35 cents per pound; cigar bands of the same number of colors and printings, 50 cents per pound; labels and flaps, printed in whole or in part in metal leaf, 60 cents per pound; cigar bands, printed in whole or in part in metal leaf, 65 cents per pound; all labels, flaps, and bands, not exceeding ten square inches cutting size in dimensions, if embossed or die-cut, shall pay the same rate of duty as hereinbefore provided for cigar bands of the same number of colors and printings (but no extra duty shall be assessed on labels, flaps, and bands for embossing or die-cutting); fashion magazines or periodicals, printed in whole or in part by lithographic process, or decorated by hand, 8 cents per pound; decalcomanias in ceramic colors, weighing not over one hundred pounds per one thousand sheets on the basis of twenty by thirty inches in dimensions, 70 cents per pound and 15 per centum ad valorem! weighing over one hundred pounds per one thousand sheets on the basis of twenty by thirty inches in dimensions, 22 cents per pound and 15 per centum ad valorem; if backed with metal leaf, 65 cents per pound; all other decalcomanias, except toy decalcomanias, 40 cents per pound; all other articles than those hereinbefore specifically provided for in this paragraph, not exceeding eight one-thousandths of an inch in thickness, 25 cents per pound; exceeding eight and not exceeding twenty one-thousandths of an inch in thickness, and less than thirty-five square inches cutting size in dimension, 10 cents per pound; exceeding thirty-five square inches cutting size in dimensions, 9½ cents per pound, and in addition thereto on all of said articles exceeding eight and not exceeding twenty one-thousandths of an inch in thickness, if either die-cut or embossed, one-half of 1 cent per pound, if both die-cut and embossed, 1 cent per pound; exceeding twenty one-thousandths of an inch in thickness, 7½ cents per pound: Provided, That in the case of articles hereinbefore specified the thickness which shall determine the rate of duty to be imposed shall be that of the thinnest material found in the article, but for the purposes of this paragraph the thickness of lithographs mounted or pasted upon paper, cardboard, or other material shall be the combined thickness of the lithograph and the foundation on which it is mounted or pasted, and the cutting size shall be the area which is the product of the greatest dimensions of length and breadth of the article, and if the article is made up of more than one piece, the cutting size shall be the combined cutting sizes of all the lithographically printed parts in the article.

Par. 1307. Writing, letter note, drawing, handmade paper and paper commercially known as handmade paper and machine handmade paper, japan paper and imitation japan paper by whatever name known, Bristol board of the kinds made on a Fourdrinier machine, and ledger, bond, record, tablet, typewriter, manifold, and onionskin and imitation onionshkin paper, calendered or uncalendered, weighing seven pounds or over per ream, and paper similar to any of the foregoing, 3 cents per pound and 15 per centum ad valorem; but if any of the foregoing is ruled, bordered, embossed, printed, lined, or decorated in any manner, other than by lithographic process, it shall pay 10 per centum ad valorem in addition to the foregoing rates: Provided, That in computing the duty on such paper every one hundred and eighty-seven thousand square inches shall be taken to be a ream.

Par. 1308. Paper envelopes not specially provided for shall pay the same rate of duty as the paper from which made and in addition thereto, if plain, 5 per centum ad valorem; if bordered, embossed, printed, tinted, decorated, or lined, 10 per centum ad valorem; if lithographed, 30 per centum ad valorem.

Par. 1309. Jacquard designs on ruled paper, or cut on Jacquard cards, and parts of such designs, 35 per centum ad valorem; hanging paper, not printed, lithographed, dyed, or colored, 10 per centum ad valorem; printed lithographed, dyed, or colored, 1½ cents per pound and 20 per centum ad valorem; wrapping paper not specially provided for, 30 per centum ad valorem; blotting paper, 30 per centum ad valorem; filtering paper 5 cents per pound and 15 per centum ad valorem; paper not specially provided for, 30 per centum ad valorem.

Par. 1310. Unbound books of all kinds, bound books of all kinds except those bound wholly or in part in leather, sheets or printed pages of books bound wholly or in part in leather, pamphlets, music in books or sheets, and printed matter, all the foregoing not specially provided for, if of bona fide foreign authorship, 15 per centum ad valorem; all other, not specially provided for, 25 per centum ad valorem; blank books, slate books, drawings, engravings, photographs, etchings, maps, and charts, 25 per centum ad valorem; book bindings or covers wholly or in part of leather, not specially provided for, 30 per centum ad valorem; books of paper or other material for children's use, printed lithographically or otherwise, not exceeding in weight twenty-four ounces each, with more reading matter than letters, numerals, or descriptive words, 25 per centum ad valorem; booklets, printed lithographically or otherwise, not specially provided for, 7 cents per pound; booklets, wholly or in chief value of paper, decorated in whole or in part by hand or by spraying, whether or not printed, not specially provided for, 15 cents per pound; all post cards (not including American views), plain, decorated, embossed, or printed except by lithographic process, 30 per centum ad valorem; views of any landscape, scene, building, place or locality in the United States, on cardboard or paper, not thinner than eight one-thousandths of one inch, by whatever process printed or produced, including those wholly or in part produced by either lithographic or photogelatin process (except show cards), occupying thirty-five square inches or less of surface per view, bound or unbound, or in any other form, 15 cents per pound and 25 per centum ad valorem; thinner than eight one-thousandths of one inch, $2 per thousand; greeting cards, and all other social and gift cards, including those in the form of folders and booklets, wholly or partly manufactured, with text or greeting, 45 per centum ad valorem; without text or greeting, 30 per centum ad valorem.

Par. 1311. Photograph, autograph, scrap, post-card and postage-stamp albums, and albums for phonograph records, wholly or partly manufactured, 30 per centum ad valorem.

Par. 1312. Playing cards, 10 cents per pack and 20 per centum ad valorem.

Par. 1313. Papers and paper board and pulpboard, including cardboard and leatherboard or compress leather, embossed, cut, die-cut, or stamped into designs or shapes, such as initials, monograms, lace, borders, bands, strips, or other forms, or cut or shaped for boxes or other articles, plain or printed, but not lithographed, and not specially provided for; paper board and pulpboard, including cardboard and leatherboard or compress leather, laminated, glazed, coated, lined, printed, decorated, or ornamented in any manner; press boards and press paper, all the foregoing, 30 per centum ad valorem; test or container boards of a bursting strength above sixty pounds per square inch by the Mullen or the Webb test, 20 per centum ad valorem; stereotype-matrix mat or board, 35 per centum ad valorem; wall pockets, composed wholly or in chief value of paper, papier-maché or paper board, whether or not die-cut, embossed, or printed lithographically or otherwise; boxes composed wholly or in chief value of paper, papier-maché or paper board, and not specially provided for; manufactures of paper, or of which paper is the component material of chief value, not specially provided for, all the foregoing 35 per centum ad valorem.

Schedule 4.—Wood and Manufactures of.

Par. 401. Logs of fir, spruce, cedar, or western hemlock, $1. per thousand feet board measure: Provided, That any such class of logs cut from any particular class of lands shall be exempt from such duty if imported from any country, dependency, province, or other subdivision of government which has, at no time during the twelve months immediately preceding their importation into the United States, maintained any embargo, prohibition or other restriction (whether by law, order, regulation, contractual relation or otherwise, directly or indirectly) upon the exportation of such class of logs from such country, dependency, province, or other subdivision of government, if cut from such class of lands.

Par. 402. Brier root or brier wood, ivy or laurel root, and similar wood unmanufactured, or not further advanced than cut into blocks suitable for the articles into which they are intended to be converted, 10 per centum ad valorem.

Par. 403. Cedar commercially known as Spanish cedar, lignum-votae, lancewood, ebony, box, granadilla, mahogany, rosewood, satinwood, Japanese white oak, and Japanese maple, in the log, 10 per centum ad valorem; in the form of sawed boards, planks, deals, and all other forms not further manufactured than sawed, 15 per centum ad valorem; veneers of wood and wood unmanufactured, not specially provided for, 20 per centum ad valorem.

Par. 404. Hubs for wheels, posts, heading bolts, stave bolts, last blocks, wagon blocks, oar blocks, heading blocks, and all like blocks or sticks, rough hewn or rough shaped, sawed or bored, 10 per centum ad valorem.

Par. 405. Casks, barrels, and hogsheads (empty), sugar-box shooks, and packing boxes (empty), and packing-bax shooks, of wood, not specially provided for, 15 per centum ad valorem.

Par. 406. Boxes, barrels, and other articles containing oranges, lemons, limes, grapefruit, shaddocks or pomelos, 25 per centum ad valorem: Provided, That the thin wood, so called, comprising the sides, tops, and bottoms of fruit boxes of the growth or manufacture of the United States, exported as fruit box shooks, may be reimported in completed form, filled with fruit, by the payment of duty at one-half the rate imposed on similar boxes of entirely foreign growth and manufacture; but proof of the identity of such shooks shall be made under regulations to be prescribed by the Secretary of the Treasury.

Par. 407. Reeds wrought or manufactured from rattan or reeds, whether round, flat, split, oval, or in whatever form, cane wrought or manufactured from rattan, cane webbing, and split or partially manufactured rattan, not specially provided for, 20 per centum ad valorem. Furniture made with frames wholly or in part of wood, rattan, reed, bamboo, osier or willow, or malacca, and covered wholly or in part with rattan, reed, grass, osier or willow, or fiber of any kind, 60 per centum ad valorem; split bamboo, 1¼ cents per pound; osier or willow, including chip of and split willow, prepared for basket makers' use, 35 per centum ad valorem; all articles not specially provided for, wholly or partly manufactured of rattan, bamboo, osier or willow, 45 per centum ad valorem.

Par. 408. Toothpicks of wood or other vegetable substance, 25 per centum ad valorem; butchers' and packers' skewers of wood, 25 cents per thousand.

Par. 409. Porch and window blinds, baskets, curtains, shades, or screens, any of the foregoing wholly or in chief value of bamboo, wood, straw, papier-maché, palm leaf, or compositions of wood, not specially provided for, 35 per centum ad valorem; if stained, dyed, painted, printed, polished, grained, or creosoted, 45 per centum ad valorem.

Par. 410. Spring clothespins, 15 cents per gross; house or cabinet furniture wholly or in chief value of wood, wholly or partly finished, wood flour, and manufactures of wood or bark, or of which wood or bark is the component material of chief value, not specially provided for 33 1/3 per centum ad valorem,

VALUATION

Provisions for the valuation of imported articles and determination of purchase conditions are:

Sec. 402. Value.—(a) For the purposes of this Act the value of imported merchandise shall be—

(1) The foreign value or the export value, whichever is higher;

(2) If neither the foreign value nor the export value can be ascertained to the satisfaction of the appraising officers, then the United States value;

(3) If neither the foreign value, the export value, nor the United States value can be ascertained to the satisfaction of the appraising officers, then the cost of production;

(4) If there be any similar competitive article manufactured or produced in the United States of a class or kind upon which the President has made public a finding as provided for in sub-division (b) of section 315 of Title III of this Act, then the American selling price of such article.

(b) The foreign value of imported merchandise shall be the market value or the price at the time of exportation of such merchandise to the United States, at which such or similar merchandise is freely offered for sale to all purchasers in the principal markets of the country from which exported, in the usual wholesale quantities and in the ordinary course of trade, including the cost of all containers and coverings of whatever nature, and all other costs, charges and expenses incident to placing the merchandise in condition, packed ready for shipment to the United States.

(c) The export value of imported merchandise shall be the market value or the price, at the time of exportation of such merchandise to the United States, at which such or similar merchandise is freely offered for sale to all purhasers in the principal markets of the country from which exported, in the usual wholesale quantities and in the ordinary course of trade, for exportation to the United States, plus, when not included in such price, the cost of all containers and coverings of whatever nature, and all other costs, charges, and expenses incident to placing the merchandise in condition, packed ready for shipment to the United States. If in the ordinary course of trade imported merchandise is shipped to the United States to an agent of the seller, or to the seller's branch house, pursuant to an order or an agreement to purchase (whether placed or entered into in the United States or in the foreign country), for delivery to the purchaser in the United States, and if the title to such merchandise remains in the seller until such delivery, then such merchandise shall not be deemed to be freely offered for sale in the principal markets of the country from which exported for exportation to the United States, within the meaning of this subdivision.

(d) The United States value of imported merchandise shall be the price that such or similar imported merchandise is freely offered for sale, packed ready for delivery, in the principal market of the United States to all purchasers, at the time of exportation of the imported merchandise, in the usual wholesale quantities and in the ordinary course of trade, with allowance made for duty, cost of transportation and insurance, and other necessary expenses from the place of shipment to the place of delivery, a commission not exceeding 6 per centum if any has been paid or contracted to be paid on goods secured otherwise than by purchase, or profits not to exceed 8 per centum and a reasonable allowance for general expenses, not to exceed 8 per centum on purchased goods.

(e) For the purpose of this title the cost of production of imported merchandise shall be the sum of—

(1) The cost of materials of, and of fabrication, manipulation, or other process employed in manufacturing or producing, such or similar merchandise, at a time preceding the date of exportation of the particular merchandise under consideration which would ordinarily permit the manufacture or production of the particular merchandise under consideration in the usual course of business;

(2) The usual general expenses (not less than 10 per centum of such cost) in the case of such or similar merchandise;

(3) The cost of all containers and coverings of whatever nature, and all other costs, charges, and expenses incident to placing the particular merchandise under consideration in condition, packed ready for shipment to the United States; and

(4) An addition for profit (not less than 8 per centum of the sum of the amounts found under paragraphs (1) and (2) of this subdivision) equal to the profit which ordinarily is added, in the case of merchandise of the same general character as the particular merchandise under consideration, by

manufacturers or producers in the country of manufacture or production who are engaged in the production or manufacture of merchandise of the same class or kind.

(f) The American selling price of any article manufactured or produced in the United States shall be the price, including the cost of all containers and coverings of whatever nature and all other costs, charges, and expenses incident to placing the merchandise in condition packed ready for delivery, at which such article is freely offered for sale to all purchasers in the principal market of the United States, in the ordinary course of trade and in the usual wholesale quantities in such market, or the price that the manufacturer, producer, or owner would have received or was willing to receive for such merchandise when sold in the ordinary course of trade and in the usual wholesale quantities, at the time of exportation of the imported article.

PRESIDENT MAY PROCLAIM EQUALIZING DUTIES

Sec. 315. (a) That in order to regulate the foreign commerce of the United States and to put into force and effect the policy of the Congress by this Act intended, whenever the President, upon investigation of the differences in costs of production of articles wholly or in part the growth or product of the United States and of like or similar articles wholly or in part the growth or product of competing foreign countries, shall find it thereby shown that the duties fixed in this Act do not equalize the said differences in costs of production in the United States and the principal competing country, he shall, by such investigation, ascertain said differences and determine and proclaim the changes in classifications or increases or decreases in any rate of duty provided in this Act shown by said ascertained differences in such costs of production necessary to equalize the same. Thirty days after the date of such proclamation or proclamations such changes in classification shall take effect, and such increased or decreased duties shall be levied, collected, and paid on such articles when imported from any foreign country into the United States or into any of its possessions (except the Philippine Islands, the Virgin Islands, and the islands of Guam and Tutuila): Provided, That the total increase or decrease of such rates of duty shall not exceed 50 per centum of the rates specified in Title I of this Act, or in any amendatory Act.

(b) That in order to regulate the foreign commerce of the United States and to put into force and effect the policy of the Congress by this Act intended, whenever the President, upon investigation of the differences in costs of production of articles provided for in Title I of this Act, wholly or in part the growth or product of the United States and of like or similar articles wholly or in part the growth or product of competing foreign countries, shall find it thereby shown that the duties prescribed in this Act do not equalize said differences, and shall further find it thereby shown that the said differences in costs of production in the United States and the principal competing country cannot be equalized by proceeding under the provisions of subdivision (a) of this section, he shall make such findings public, together with a description of the articles to which they apply, in such detail as may be necessary for the guidance of appraising officers. In such cases and upon the proclamation by the President becoming effective the ad valorem duty or duty based in whole or in part upon the value of the imported article in the country of exportation shall thereafter be based upon the American selling price, as defined in subdivision (f) of section 402 of this Act, of any similar competitive article manufactured or produced in the United States embraced within the class or kind of imported articles upon which the President has made a proclamation under subdivision (b) of this section.

The ad valorem rate or rates of duty based upon such American selling price shall be the rate found, upon said investigation by the President, to be shown by the said differences in costs of production necessary to equalize such differences, but no such rate shall be decreased more than 50 per centum of the rate specified in Title I of this Act upon such articles nor shall any such rate be increased. Such rate or rates of duty shall become effective fifteen days after the date of the said proclamation of the President, whereupon the duties so estimated and provided shall be levied, collected, and paid on such articles when imported from any foreign country into the United States or into any of its possessions (except the Philippine Islands, the Virgin Islands, and the islands of Guam and Tutuila). If there is any imported article within the class or kind of articles, upon which there is no similar competitive article manufactured or produced in the United States, the value of such imported article shall be determined under the provisions of paragraphs (1), (2), and (3) of subdivision (a) of section 402 of this Act.

(c) That in ascertaining the differences in costs of production, under the provisions of subdivisions (a) and (b) of this section, the President, in so far as he finds it practicable, shall take into consideration (1) the differences in conditions in production, including wages, costs of material, and other items in costs of production of such or similar articles in the United States and in competing foreign countries; (2) the differences in the wholesale selling prices of domestic and foreign articles in the principal markets of the United States; (3) advantages granted to a foreign producer by a foreign government, or by a person, partnership, corporation, or association in a foreign country; and (4) any other advantages or disadvantages in competition.

Investigations to assist the President in ascertaining differences in costs of production under this section shall be made by the United States Tariff Commission, and no proclamation shall be issued under this section until such investigation shall have been made. The commission shall give reasonable public notice of its hearings and shall give reasonable opportunity to parties interested to be present, to produce evidence, and to be heard. The commission is authorized to adopt such reasonable procedure, rules, and regulations as it may deem necessary.

The President, proceeding as hereinbefore provided for in proclaiming rates of duty, shall, when he determines that it is shown that the differences in costs of production have changed or not longer exist which led to such proclamation, accordingly as so shown, modify or terminate the same. Nothing in this section shall be construed to authorize a transfer of an article from the dutiable list to the free list or from the free list to the dutiable list, nor a change in form of duty. Whenever it is provided in any paragraph of Title I of this Act, that the duty or duties shall not exceed a specified ad valorem rate upon the articles provided for in such paragraph, no rate determined under the provision of this section upon such articles shall exceed the maximum ad valorem rate so specified.

(d) For the purposes of this section any coal-tar product provided for in paragraphs 27 or 28 of Title I of this Act shall be considered similar to or competitive with any imported coal-tar product which accomplishes results substantially equal to those accomplished by the domestic product when used in substantially the same manner.

(e) The President is authorized to make all needful rules and regulations for carrying out the provisions of this section.

(f) The Secretary of the Treasury is authorized to make such rules and regulations as he may deem necessary for the entry and declaration of imported articles of the class or kind of articles upon which the President has made a proclamation under the provisions of subdivision (b) of this section and for the form of invoice required at time of entry.

UNFAIR COMPETITION

Sec. 316. (a) That unfair methods of competition and unfair acts in the importation of articles into the United States, or in their sale by the owner, importer, consignee, or agent of either, the effect or tendency of which is to destroy or substantially injure an industry, efficiently and economically operated, in the United States, or to prevent the establishment of such an industry, or to restrain or monopolize trade and commerce in the United States, are hereby declared unlawful, and when found by the President to exist shall be dealt with, in addition to any other provisions of law, as hereinafter provided.

(b) That to assist the President in making any decisions under this section the United States Tariff Commission is hereby authorized to investigate any alleged violation hereof on complaint under oath or upon its initiative.

(c) That the commission shall make such investigation under and in accordance with such rules as it may promulgate and give such notice and afford such hearing, and when deemed proper by the commission such rehearing with opportunity to offer evidence, oral or written, as it may deem sufficient for a full presentation of the facts involved in such investigation; that the testimony in every such investigation shall be reduced to writing, and a transcript thereof with the findings and recommendation of the commission shall be official record of the proceedings and findings in the case, and in any case where the findings in such investigation show a violation of this section, a copy of the findings shall be promptly mailed or delivered to the importer or consignee of such articles that such findings, if supported by evidence, shall be conclusive, except that such findings, if supported by evidence, shall be conclusive, except that a rehearing may be granted by the commission, and except that within such time after said findings are made,made, and in such manner as appeals may be taken from decisions of the United States Board of General Appraisers, an appeal may be taken from said findings upon a question or questions of law only to the United States Court of Customs Appeals by the importer or consignee of such articles that if it shall be shown to the satisfaction of said court that further evidence should be taken, and that there were reasonable grounds for the failure to adduce such evidence in the proceedings before the commission, said court may order such additional evidence to be taken before the commission in such manner and upon such terms and conditions as to the court may seem proper that the commission may modify its finding as to the facts or make new findings by reason of additional evidence, which, if supported by evidence, shall be conclusive as to the facts except that within such time and in such manner an appeal may be taken as aforesaid upon a question or questions of law only; that the judgment of said court shall be final, except that the same shall be subject to review by the United States Supreme Court upon certiorari applied for within three months after such judgment of the United States Court of Customs Appeals.

(d) That the final findings of the commission shall be transmitted with the record to the President.

(e) That whenever the existence of any such unfair method or act shall be established to the satisfaction of the President he shall determine the rate of additional duty, not exceeding 50 nor less than 10 per centum of the value of such articles as defined in section 402 of Title IV of this Act, which will offset such method or act, and which is hereby imposed upon articles imported in violation of this Act, or, in what he shall be satisfied and find are extreme cases of unfair methods or acts as aforesaid, he shall direct that such articles as he shall deem the interests of the United States shall require, imported by any person violating the provisions of this Act shall be excluded from entry into the United States, and upon information of such action by the President, the Secretary of the Treasury shall, through the proper officers, assess such additional duties or refuse such entry; and that the decision of the President shall be conclusive.

(f) That whenever the President has reason to believe that any article is offered or sought to be offered for entry into the United States in violation of this section but has not information sufficient to satisfy him thereof, the Secretary of the Treasury shall, upon his request in writing, forbid entry thereof until such investigation as the President may deem necessary shall be completed: Provided, That the Secretary of the Treasury may permit entry under bond upon such conditions and penalties as he may deem adequate.

(g) That any additional duty or any refusal of entry under this section shall continue in effect until the President shall find and instruct the Secretary of the Treasury that the conditions which led to the assessment of such additional duty or refusal of entry no longer exist.

Sec. 317 (A) That the President when he finds that the public interest will be served thereby shall by proclamation specify and declare new or additional duties as hereinafter provided upon articles wholly or in part the growth or product of any foreign country whenever he shall find as a fact that such country—

Imposes, directly or indirectly, upon the disposition in or transportation in transit through or reexportation from such country of any article wholly or in part the growth or product of the United States any unreasonable charge, exaction, regulation, or limitation which is not equally enforced upon the like articles of every foreign country;

Discriminates in fact against the commerce of the United States, directly or indirectly, by law or administrative regulation or practice, by or in respect to any customs, tonnage, or port duty, fee, charge, exaction, classification, regulation condition, restriction, or prohibition, in such manner as to place the commerce of the United States at a disadvantage compared with the commerce of any foreign country.

(B) If at any time the President shall find it to be a fact that any foreign country has not only discriminated against the commerce of the United States, as aforesaid, but has, after the issuance of a proclamation as authorized in subdivision (A) of this section, maintained or increased its said discriminations against the commerce of the United States, the President is hereby authorized, if he deems it consistent with the interests of the United States, to issue a further proclamation directing that such articles of said country as he shall deem the public interests may require shall be excluded from importation into the United States.

(C) That any proclamation issued by the President under the authority of this section shall, if he deems it consistent with the interests of the United States, extend to the whole of any foreign country or may be confined to any subdivision or subdivisions thereof; and the President shal, whenever he deems the public interests require, suspend, revoke, supplement, or amend any such proclamation.

(D) Whenever the President shall find as a fact that any foreign country places any burdens upon the commerce of the United States by any of the unequal impositions or discriminations aforesaid, he shall, when he finds that the public interest will be served thereby, by proclamation specify and declare such new or additional rate or rates of duty as he shall determine will offset such burdens, not to exceed 50 per centum ad valorem or its equivalent, and on and after thirty days after the date of such proclamation there shall be levied, collected, and paid upon the articles enumerated in such proclamation when imported into the United States from such foreign country such new or additional rate or rates of duty; or, in case of articles declared subject to exclusion from importation the United States under the provisions of subdivision (B) of this section, such articles shall be excluded from importation.

(E) Whenever the President shall find as a fact that any foreign country imposes any unequal imposition or discrimination as aforesaid upon the commerce of the United States, or that any benefits accrue or are likely to accrue to any industry in any foreign country by reason of any such imposition or discrimination imposed by any foreign country other than the foreign country in which such industry is located, and whenever the President shall determine that any new or additional rate or rates of duty or any prohibitions hereinbefore provided for do not effectively remove such imposition or discrimination and that any benefits from any such imposition or discrimination accrue or are likely to accrue to any industry in any foreign country, he shall, when he finds that the public interest will be served thereby, by proclamation specify and declare such new or additional rate or rates of duty upon the articles wholly or in part the growth or product of any such industry as he shall determine will offset such benefits, not to exceed 50 per centum ad valorem or its equivalent, upon importation frmo ank foreign country into the United States of such articles and on and after thirty days after the date of any such proclamation such new or additional rate or rates of duty so specified and declared in such proclamation shall be levied, collected, and paid upon such articles.

(F) All articles imported contrary to the provisions of this section shall be forfeited to the United States and shall be liable to be seized, prosecuted, and condemned in like manner and under the same regulations, restrictions, and provisions as may from time to time be established for the recovery, collection, distribution, and remission of forfeitures to the United States by the several revenue laws. Whenever the provisions of this Act shall be applicable to importations into the United States of articles wholly or in part the growth or product of any foreign country, they shall be applicable thereto whether such articles are imported directly or indirectly.

Tariff Commission to Ascertain Facts

(G)It shall be the duty of the United States Tariff Commission to ascertain and at all times to be informed whether any of the discriminations against the commerce of the United States enumeraetd in subdivisions (A), (B), and (E) of this section are practiced by any country; and if and when such commission to bring the matter to the attention of the Presidiscriminatory acts are disclosed, it shall be the duty of the dent, together with recommendations.

(H) The Secretary of the Treasury with the approval of the President shall make such rules and regulations as are necessary for the execution of such proclamations as the President may issue in acordance with the provisions of this section.

(1i That when used in this section the term "foreign country" shall mean any empire, country, dominion, colony, or protectorate, or any subdivision or subdivisions thereof (other than the United States and its possessions), within which separate tariff rates or separate regulations of commerce are enforced.

Sec. 318. (a) That in order that the President and the Congress may secure information and assistance, it shall be the duty of the United States Tariff Commission, in addition to the duties now imposed upon it by law, to—

(1) Ascertain conversion costs and costs of production in the principal growing, producing, or manufacturing centers of the United States of articles of the United States, whenever in the opinion of the commission it is practicable;

(2) Ascertain conversion costs and costs of production in the principal growing, producing, or manufacturing centers of foreign countries of articles imported into the United States, whenever in the opinion of the commission such conversion costs or costs of production are necessary for comparison with conversion costs or costs of production in the United States and can be reasonably ascertained;

(3) Select and describe articles which are representative of the classes or kinds of articles imported into the United States and which are similar to or comparable with articles of the United States; select and describe articles of the United States similar to or comparable with such imported articles; and obtain and file samples of articles so selected, whenever the commission deems it advisable;

(4) Ascertain import costs of such representative articles so selected;

(5) Ascertain the grower's, producer's, or manufacturer's selling prices in the principal growing, producing, or manufacturing centers of the United States of the articles of the United States so selected; and

(6) Ascertain all other facts which will show the differences in or which affect competition between articles of the United States and imported articles in the principal markets of the United States.

Definitions

(b) When used in this section—

The term "article" includes any commodity, whether grown, produced, fabricated, manipulated, or manufactured;

The term "import cost" means the price at which an article is freely offered for sale in the ordinary course of trade in the usual wholesale quantities for exportation to the United States plus, when not included in such price, all necessary expenses, exclusive of customs duties, of bringing such imported article to the United States.

(c) In carrying out the provisions of this section the commission shall possess all the powers and privileges conferred upon it by the provisions of Title VII of the Revenue Act of 1916, and in addition it is authorized, in order to ascertain any facts required by this section, to require any importer and any American grower, producer, manufacturer, or seller to file with the commission a statement, under oath, giving his selling prices in the United States of any article imported, grown, produced, fabricated, manipulated, or manufactured by him.

(d) The commission is authorized to establish and maintain an office at the port of New York for the purpose of directing or carrying on any investigation, receiving and compiling statistics, selecting, describing, and filing samples of articles, and performing any of the duties or exercising any of the powers imposed upon it by law.

(e) The United States Tariff Commission is authorized to adopt an official seal, which shall be judicially noticed.

(f) The second paragraph of section 706 of the Revenue Act of 1916 is amended to read as follows:

"Such attendance of witnesses and the production of such documentary evidence may be required from any place in the United States at any designated place of hearing. And in case of disobedience to a subpoena the commission may invoke the aid of any district or territorial court of the United States or the Supreme Court of the District of Columbia in requiring the attendance and testimony of witnesses and the production of documentary evidence, and such court within the jurisdiction of which such inquiry is carried on may, in case of contumacy or refusal to obey a subpoena issued to any corporation or other person, issue an order requiring such corporation or other person to appear before the commission, or to produce documentary evidence if so ordered or to give evidence touching the matter in question; and any failure to obey such order of the court may be punished by such court as a contempt thereof."

SPECIAL PROVISIONS

Foreign Aid to Producers and Exporters

Sec. 303. That whenever any country, dependency, colony, province, or other political subdivision of government, person, partnership, association, cartel, or corporation shall pay or bestow, directly or indirectly, any bounty or grant upon the manufacture or production or export of any article or merchandise manufactured or produced in such country, dependency, colony, province, or other political subdivision of government, and such article or merchandise is dutiable under the provisions of this Act, then upon the importation of any such article or merchandise into the United States, whether the same shall be imported directly from the country of production or otherwise, and whether such article or merchandise is imported in the same condition as when exported from the country of production or has been changed in condition by remanufacture or otherwise, there shall be levied and paid in all such cases in addition to the duties otherwise imposed by this Act, an additional duty equal to the net amount of such bounty or grant, however the same be paid or bestowed. The net amount of all such bounties or grants shall be from time to time ascertained, determined, and declared by the Secretary of the Treasury, who shall make all needful regulations for the identification of such articles and merchandise and for the assesment and collection of such additional duties.

Marking of Goods

Ses. 304. (a) That every article imported into the United States, which is capable of being marked, stamped, branded, or labeled, without injury, at the time of its manufacture or production, shall be marked, stamped, branded, or labeled, in legible English words, in a conspicuous place that shall not be covered or obscured by any subsequent attachments or arrangements, so as to indicate the country of origin. Said marking, stamping, branding, or labeling shall be as nearly indelible and permanent as the nature of the article will permit. Any such article held in customs custody shall not be delivered until so marked, stamped, branded, or labeled, and until every such article of the importation which shall have been released from customs custody not so marked, stamped, branded, or labeled, shall be marked stamped, branded or labeled, in accordance with such rules and regulations as the Secretary of the Treasury may prescribe. Unless the article is exported under customs supervision, there shall be levied, collected, and paid upon every such article which at the time of importation is not so marked, stamped, branded, or labeled, in addition to the regular duty imposed by law on such article, a duty of 10 per centum of the appraised value thereof, or if such article a duty of 10 per centum of the appraised value thereof.

Every package containing any imported article, or articles, shall be marked, stamped, branded, or labeled, in legible English words, so as to indicate clearly the country or origin. Any such package held in customs custody shall not be delivered unless so marked, stamped, branded, or labelled, and until every package of the importation which shall have been released from customs custody not so marked, stamped, branded, or labeled shall be marked, stamped, branded, or labeled, in accordance with such rules and regulations as the Secretary of the Treasury may prescribe.

The Secretary of the Treasury shall prescribe the necessary rules and regulations to carry out the foregoing provisions.

(b) If any person shall fraudulently violate any of the provisions of this Act relating to the marking, stamping, branding, or labeling of any imported articles or packages or shall fraudulently deface, destroy, remove, alter, or obliterate any such marks, stamps, brands, or labels with intent to conceal the information given by or contained in such marks, stamps, brands, or labels, he shall upon conviction be fined in any sum not exceeding $5,000, or be imprisoned for any time not exceeding one year, or both.

CONTENTS OF INVOICE

Sec. 481. (a) That all invoices of merchandise to be imported into the United States shall set forth—

(1) The port of entry to which the merchandise is destined;

(2) The time when, the place where, and the person by whom and the person to whom the merchandise is sold or agreed to be sold, or if to be imported otherwise than in pursuance of a purchase, the place from which shipped, the time when and the person to whom and the person by whom it is shipped;

(3) A detailed description of the merchandise, including the name by which each item is known, the grade or quality, and the marks, numbers, or symbols under which sold by the seller or manufacturer to the trade in the country of exportation, together with the marks and numbers of the packages in which the merchandise is packed;

(4) The quantiites in the weights and measures of the country or place from which the merchandise is shipped, or in the weights and measures of the United States;

(5) The purchase price of each item in the currency of the purchase, if the merchandise is shipped in pursuance of a purchase or an agreement to purchase;

(6) If the merchandise is shipped otherwise than in pursuance or an agreement to purchase the value for each item, in the currency in which the transactions are usually made or, in the absence of such value, the price in such currency that the manufacturer, seller, shipper, or owner would have received, or was willing to receive, for such merchandise if sold in the ordinary course of trade and in the usual wholesale quantities in the country of exportation;

(7) The kind of currency, whether gold, silver, or paper;

(8) All charges upon the merchandise, itemized by name and amount when known to the seller or shipper; or all charges by name (including commissions, insurance, freight, cases, containers, coverings, and cost of packing) included in the

invoice prices when the amounts for such charges are unknown to the seller or shipper;

(9) All rebates, drawbacks, and bounties, separately itemized, allowed upon the exportation of the merchandise; and

(10) Any other facts deemed necessary to a proper appraisement, examination, and classification of the merchandise that the Secretary of the Treasury may require.

(b) If the merchandise is shipped to a person in the United States by a person other than the manufacturer, otherwise than by purchase, such person shall state on the invoice the time when, the place where, the person from whom such merchandise was purchased, and the price paid thereof in the currency of the purchase, stating whether gold, silver, or paper.

(c) When the merchandise has been purchased in different consular districts for shipment to the United States and is assembled for shipment and embraced in a single invoice which is produced for certification under the provisions of paragraph (2) of subdivision (a) of section 482 of this Act, the invoice shall have attached thereto the original bills or invoices received by the shipper, or extracts therefrom, showing the actual prices paid or to be paid for such merchandise. The consular officer to whom the invoice is so produced for certification may require that any such original bill or invoice be certified by the consular officer for the district in which the merchandise was purchased .

DATE OF TAKING EFFECT

Except where otherwise specifically provided, the Act is to take effect on the day following its passage.

Alkaline and Acid Bleaching*

An Address by Dr. Hottenroth, Waldhof, Before the Society of Pulp and Paper Chemists, Berlin, November. 1921.

Review Of The Literature.

Nussbaum and Ebert (Untersuchungen uber die chemischen Vorgange beim Bleichprozess, 1907) arrive at the following conclusions regarding alkaline and acid bleaching.

1. The rate of bleaching is slower in an alkaline solution, and increases in an acid solution proportionally to the square of the acidity of the liquor.
2. The rate of bleaching doubles for approximately each 7 deg. C. increase in temperature.
3. The bleaching action, other things being the same, is independent of the hypochlorite concentration between definite but rather wide limits.
4. With equal chlorine consumption, pulps bleached at a higher temperature are whiter.
5. The more acid the bleach liquor is, the greater is the quantity of chlorine necessary to secure the same whiteness.
6. The more acid the bleach, the more affected are the fibres, other conditions being the same, and therefore the greater the fibre loss during bleaching.
7. The colder the bleach liquor, the more is the yellowing, which tends to be bleached, the less acid or more alkaline the solution.

Their investigation, in spite of its value and completeness, does not solve all of the problems connected with the bleaching process. Moreover, only one kind of material, sulfite cellulose, was used, and electrolytic bleach was employed with sulfuric acid as the acidifying substance. It is still an open question whether these results are true of other bleach liquors, as chloride of lime, and to other accelerating substances, as carbon dioxide (i. e. carbonic acid.)

The same criticism applies to the work of Beadle and Stevens (Einfluss von Beschleunigungsmitteln auf das Bleichen von Baumwolle und Holzstoffe, 1908). Chloride of lime solution was used in their investigations together with sulfuric acid and another substance the identity of which was not revealed. For this reason their data cannot be advantageously used. The most important positive result of their work is that the greater the chloride of lime consumption, the greater the amount of accelerating substance necessary.

Schwalbe has established that under normal conditions chlorination of cellulose does not occur in the bleaching process, consequently chlorides can not be considered as responsible for the yellowing of the material. Hot alkaline bleach is itself harmless to the material when the temperature does not appreciably exceed the limit of 30 to 35 deg. C., but the reducing capacity (copper number) of the material bleached in an acid solution is higher than when bleached in an alkaline one. Since sulfuric acid was the only acid used, the result warrants further investigation with other accelerating substances, for example, carbon dioxide.

Although much work on the subject has been carried out, there are many unsolved problems. Indeed if one question is luckily answered, three new ones appear; in this respect it may be said that the bleaching process is a true Hydra.

The author's contribution is based on certain observations incidental to a very large number of bleaching experiments which were performed. It is hoped that some light will be thrown on definite parts of the bleaching process although these investigations are by no means complete.

To begin with, the question naturally arises as to why the usual acid bleach has not found the general application which might be expected relative to the benefits to be gained by accelerating the process and especially to the bleaching of pulp, where alkaline chloride of lime is still preferred. Perhaps it has not been used since it affects the quality of the pulp. That the material is attacked to a greater extent in an acid bath than in an alkaline one seems certain. Nussbaum and Ebert have determined a definite fibre loss, and Schwalbe has observed a definite increase in the copper number when an acid bath is employed. But as is evident from the literature it seems that sulfuric acid has been the only substance used as a means of hastening the bleaching action. Carbonic acid, however, is at our disposal and has been used here and there but its action apparently has never been systematically studied. This is the main object of the investigation—the application of carbon dioxide as an accelerating agent.

Carbon Dioxide as Accelerating Agent

The practical use of carbon dioxide in a factory offers no great difficulties, especially if it is passed into the bleach liquor which is stored in a tank, directly before the pulp is added. The cost depends on what form of carbon dioxide is most favorable for use in the industry. With the bleaching of pulp and rags, probably flue gases could be utilized. Besides it is to be expected that carbon dioxide would not necessarily give the same bleaching effect as other accelerators; secondly, it is possible that with the use of carbon dioxide the fibre losses will be less than when mineral acids are used or when heat is applied.

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* Translated by John L. Parsons, Hammermill Paper Company, Erie, Pa., from Zellstoff und Papier 2, 1 (1922); 6-8.

The first point is concerned with the accelerating action of carbon dioxide. This substance, as is well known, reacts with hypochlorites setting free the weaker hypochlorous acid in the same manner as other acids. If the bleaching actions on a definite dyestuff, for example, litmus, in both acid and alkaline solutions are compared, the differences in behavior are very noticeable. When a chloride of lime solution is divided into two parts, one of which is treated by passing carbon dioxide into it and strips of litmus paper are dipped into each solution simultaneously and immediately withdrawn, it is seen that the strip from the acidified solution is bleached white, while the other remains colored as it comes from the solution but gradually becomes white in the air. Dilution of the bleach liquor somewhat diminishes the bleaching action in the acidified bath, yet the same difference always remains between the acidified and the alkaline baths. It must be considered that the action in both cases, not only with regard to the specific chemical reaction, but also the nature of this reaction, may be different.

Disregarding the bleaching action on the coloring matter, it is indisputable that carbon dioxide accelerates the bleaching effect on pulp. The author's tests confirm this fact.

Concerning the second point it is to be expected that a less detrimental influence will be exerted on the fibres when carbon dioxide is used than when mineral acids are used. Disregarding the direct action of the acid, since only small quantities are used, carbon dioxide cannot lead to the formation of free chlorine as is the case with sulfuric or even hydrochloric acid. Chlorides present in the liquor are not decomposed to hydrochloric acid by carbon dioxide and the only possibility of the formation of hydrochloric acid is in the decomposition of hypochlorous acid. Local over-concentrations of carbon dioxide should be carefully avoided.

It is interesting to note the pronounced action of acidified bleach liquor on blue litmus. As long as a sufficient quantity of hypochlorous acid is present, blue litmus is immediately bleached to a white color; reddening is not observed. With the gradual consumption of hypochlorous acid, the bleaching action is diminished and, in a bleaching liquor acidified with carbon dioxide, litmus paper retains its blue color; on the other hand, in baths acidified with sulfuric or acetic acids a strong red coloration occurs.

Acidity as determined by titration is, of course, present when carbon dioxide is used but, on the other hand, the reddening brought about when sulfuric acid is added to the bath is not due directly to the acid added since the sulfuric acid immediately combines with the lime which is present.

To prove the two preceding points the action of carbon dioxide was compared with other accelerating substances. It must be remembered that heat also has an accelerating effect. In this connection Nussbaum and Ebert have established the fact that for each temperature increase of 7 deg. C. the bleaching time is reduced one half. The essential results of the comparative tests are summarized as follows:

1. Heating the alkaline bath does not produce the same rapid bleaching of litmus paper that is obtained with a cold acidified bath.
2. It is not possible, with equal bleach consumption, to obtain the same bleaching effect on chemical pulp with cold acidified bleach as with warm alkaline bleach.
3. Chemical pulp bleached with cold chloride of lime solution, acidified with carbonic acid, gives a higher copper number and inferior whiteness as compared with that obtained with warm alkaline bleach. The copper number obtained when carbon dioxide is used is approximately the same as that found when sulfuric acid, to an equal degree of acidity, is employed. This point, however, needs further investigation since some of the values so obtained varied.

It appears that these results correspond somewhat closely to expectations. What Nussbaum and Ebert have established with sulphuric acid and as Beadle and Stevens have shown that "with equivalent chlorine consumption, samples bleached at higher temperature are whiter" and "the more acid the bleach liquor is, the greater is the amount of chlorine necessary for the production of the same degree of whiteness" has been found true for carbon dioxide. A comparison of point 1 with point 2 shows the difference in action on the color and on the pulp. With regard to the increase in the copper number, with the acid bath compared to the warm alkaline one, it may be the case that this increase is partly due to the fact that the warm alkaline bleach tends to dissolve oxy-and hydrocelluloses.

Carbon dioxide is certainly a useful accelerating agent but without any advantages to offer in comparison with other acids or with heating. Carbon dioxide can be used instead of heating and accomplishes the same results as sulfuric acid.

The quantitative aspects of the reactions may now be considered. If the bleaching action of the acidified bath is to be followed, one must determine the strength of the acid, the total chlorine content, and the time which elapses after the addition of the pulp at the point when the rapid bleaching action of the acidified bath disappears and does not return. The alkalinity of the liquor need not be taken into consideration. The literature contains data to the effect that a small amount of acid is sufficient to acidify the hypochlorite bath, because it is regenerated. Lunge, for example, states this in an old patent for acetic acid and gives the corresponding formulas. According to this patent, acetic acid first liberates hypochlorous acid with the formation of calcium acetate. Then hypochlorous acid decomposes into hydrochloric acid and oxygen; the hydrochloric acid then liberates acetic acid from calcium acetate, and this again reacts with the hypochlorous acid and so on in a continuous cycle until all of the hypochlorite is consumed. To be sure the assumption is rather remarkable that hydrochloric acid should react only with calcium acetate forming acetic acid which in turn sets free hypochlorous acid from hypochlorite, as if the hydrochloric acid did not even react directly with the hypochlorite. But whatever is concerned in the continual regeneration of free acid takes place when carbon dioxide is used. This does not occur in the same manner or to the same degree as with mineral acids, as stated in the previously mentioned observation that after the decline of the bleaching action of the bath acidified with sulfuric or acetic acids there appears a strong red coloration of litmus paper, which does not occur in a bleach bath acidified with carbon dioxide.

The following distinction in the application of acids can be made. It is well known that with mineral acids the amount used must be carefully regulated. Schwalbe has shown that only that amount of acid which is necessary to neutralize the alkaline constituents of the bleach solution should be used. This definite limit holds for mineral acids but for carbon dioxide the amount used can be varied between definite limits. When optimum conditions for the acceleration of the bleaching process with carbon dioxide are secured, care must be taken to avoid an excess of the gas and, of course, local over-concentrations should be prevented.

According to theory, to liberate the hypochlorous acid from the calcium hypochlorite, for one mol. of effective chlorine (which is equivalent to $CaOCl_2$) one-half mol. of CO_2 is required, therefore for 71 grams of chlorine 22 grams or about one-third by weight of CO_2 are necessary. In addition, acid is consumed by the free alkali in the chlorid eof lime. Furthermore, a part of the carbon dioxide escapes unconsumed. The best effect is obtained with carbon dioxide when its concentration is regulated to maintain the bleaching action of the bath as long as possible during the bleaching process. The bath should be treated to a point of only weak acidity and the action on litmus observed so that more carbon dioxide can be added when the rapid bleaching effect has disappeared. With the same chlorine consumption, the effect is nearly the same as with a warm alkaline bath but a pulp, with a higher copper number results.

A true explanation is still lacking why the chlorine consumption is so much greater with the acidified bath. We know that the formation of free hypochlorous acid, upon acidification, is not the only reaction. We also know that the fibers are noticeably attacked in an acid bath and, furthermore, hydro-and especiall oxy-cellulose formation takes place.

In any case, this much is established that in an acidified bath at least a not inconsiderable portion of the hypochlorous acid is consumed without causing a corresponding bleaching action. Apart from special theories and speaking in general, there seems for the process itself and for the observed difference in the action with respect to the alkalinity of the one bath and the acidity of the other, that the hypothetical assumption is not improbable that acid bleach in its initial stage leads to oxidation products of an acid nature which are only easily removed in an alkaline solution. Such oxidation products may be precipitated on the fibers and on the one hand may interfere with the bleaching process and on the other hand may influence the color of the pulp. Although subsequent alkaline treatment produces favorable results, that is a whiter color, which might be in harmony with this theory, nevertheless it remains an hypothesis.

Still this hypothesis gives a basis for investigating what effect can be produced with a combination of acid and alkaline bleach. One might think that perhaps this would be too complicated for operation on a large scale but this is certainly not the case. It is, in a certain sense, simpler than an entirely acid bleach. The difference is merely this—that only a portion of the total bleach liquor needs to be acidified in such a combined bleaching process.

The results which this combination gives are suprising. The following three comparative tests show the effects:

I. A sample of sulphite pulp was treated, at about 30 deg. C., in an alkaline chloride of lime bath, which contained 15 per cent chloride of lime. Twelve per cent chloride of lime was consumed in bleaching.

II. An equivalent amount of the same material was treated with 15 per cent chloride of lime at the usual temperature; the solution was acidified with carbon dioxide. In this test likewise 12 per cent chloride of lime was consumed.

III. An equal quantity of the same material was next treated with 10 per cent chloride of lime and acidified. 7.25 per cent was consumed. Subsequent treatment was carried out in an alkaline bath containing 5 per cent chloride of lime at about 30 deg. C. In this stage 3 per cent was consumed. The entire test required 10.25 per cent chloride of lime, computed on the dry pulp.

The bleaching action was considerably better with the alkaline bath, I, than with the acid bath, II. With combined treatment, III, the results were considerably better than wtih I, in spite of the smaller chlorine consumption. It might have been expected that experiment III would have resulted in a much more deleterious action than I, because with III a part of the favorable, warm alkaline bath was substituted by the acidified bath which exerted a destructive effect when used alone as in test II. This unexpected result shows that this surprising effect is caused by the combined actions of acid and alkaline baths. The previously mentioned hypothesis gives an explanation for this, i. e., that bleaching with free hypochlorous acid leads to intermediate products of oxidation which are only easily and quickly removed by alkaline hypochlorite. It is understood by this hypothesis that the order acid—alkaline is necessary for the desired effect, and the reverse process, i. e., treatment of the pulp first in an alkaline and then in an acid hypochlorite bath (as proposed in Lunge's patent) does not give as satisfactory a result.

Under otherwise similar conditions, especially with the same chlorine consumption, a better bleaching effect, i. e., a whiter pulp, is produced with this combined process, than with only an acid or an alkaline bleach, or by reversing the order of the baths. To produce the same degree of whiteness as with other baths, the combined process requires less chlorine and steam. Furthermore, the fibres are not as drastically attacked as with the entirely acid bleach or as with the alkaline-acid process. While the acid bath alone has a too drastic effect on the fibres, it is used in this case only at the beginning of the bleaching process and at this stage large amounts of easily oxidizable substances are present, hence the free hypochlorous acid is readily consumed.

If it is desired to utilize an acid chloride of lime solution as an accelerating agent, then it is recommended that the entire amount of bleach liquor be not allowed to pass into the acid bath, but to bleach again in an alkaline one. The best results obtained as yet have been produced by using 2-3 to 3-4 of the chlorine in the acidified bath; with the remainder in the alkaline bath.

CHICAGO MEETING CENTERS ON SALESMEN

Plans were formulated for the biggest convention yet held by the Salesmen's Association of the Paper Industry, at a conference in New York Wednesday evening, September 20, attended by leaders of the Chicago district who are in direct charge of the arrangements, and eastern officers of the Salesmen's Association. The Chicago Salesmen will take charge of the social side of Paper Week in Chicago the week of October 16, and their own particular part of the program will be their convention on Tuesday, October 17.

The speakers' committee has completed the list of after-dinner speakers for the banquet, for in addition to Gov. Lowden, Edgar Guest, the noted humorist will give one of his characteristic addresses, and the chaplain, Dr. George Craig Stewart will talk on the work of the salesmen and its relationship to the success of the American Paper and Pulp Association of which the salesmen's organization is a part.

Inasmuch as the fall conference of the paper industry at Chicago does not include a formal banquet, but a joint luncheon on Thursday between the manufacturers and the merchants, the salesmen are planning to make the Tuesday banquet the central social figure of the week.

One man's effort toward safety may seem small but all together we can do a great deal.

British Trade News

London, Sept. 9, 1922

The topic of discussion during the past week in London paper and pulp circles, is the invitation to investors to take up preference shares at par and £150,000—6 1-2 p. c. first mortgage debenture stock at 95 p. c. (redeemable at 103), in the Inveresk Paper Company, (1922), Ltd., of Musselburgh, Scotland. Needless, to say, the public confidence is so great in paper mill propositions nowadays that the ink was hardly dry on the invitation when the announcement was made that the list of subscriptions was over subscribed. The capital of the company is £250,000—8 p. c. cumulative preference shares of £1 each and 125,000 ordinary shares of £1 each. The directors and others applied for 85,000 ordinary shares, payable at par and the balance was issued as fully paid to the vendors.

Esparto Output

Fifty years ago the Inveresk mill was established and ever since it has been a successful and profitable undertaking, enjoying a good reputation in the paper trade for the manufacture of esparto papers of the highest grades. The mill has a large number of regular customers for the company's special water-mark and coated papers, which means a steady and profitable trade. Arrangements are now being made to secure a continuity of the mill management which has been so succesful in the past.

There are four papermaking machines in the mill, with auxiliary plant, together with a fully equipped six-machine coating mill and numerous houses and cottages for the workers. The present output, including about 100 tons of coated paper, is nearly 200 tons per week. Since December last the mill has had no contracts for raw materials, except at current market prices and the directors estimate that the profits for the year ending August 31, last will be approximately £49,000. These profits are sufficient to cover the debenture interest over five times, and after the payment of the interest and sinking fund on debenture stock the profits remaining are sufficient to cover the dividend on the preference shares more than 3 1-2 times, so that a substantial margin will remain for reserves and dividends on ordinary shares.

The loss of £36,263 for the period ended Aug. 31, 1921 was due to the exceptional fall in the value of stocks of esparto grass in hand and contracted for in advance in the ordinary course of trade. The whole of these stocks were consumed in 1921 and the profits since shown have been earned from raw material purchased at the current market prices and do not include any refund of Excess Profits Duty. Excluding machinery, stocks, and materials, the value of the property Inveresk Paper Cop. (1922) Ltd. is put at about £176,948.

The Directors

Mr. Ernest Soanes Lendrum, who is amongst the directorate, is the managing director of Lendrums, of London, who enjoy a big export trade with the Far East, Australia, and incidentally Canada. Mr. Cranston will have charge of the commercial department and will receive a salary at the rate of £800 a year, plus 1-2 p. c. commission on the net profits earned in each year. Mr. Tait will take over the enamelling department and will be paid £800 a year plus 1-2 p. c., as commission on the net profits each year. Each of the Directors of the company, except the chairman, will be paid out of the funds of the company by way of renumeration for his services as a Director at the rate of £200 a year, the renumeration of the chairman being £300.

Messrs. Bertrams', papermakers engineers, have inspected the mill machinery and they certify that the present day value of the entire plant, as a going concern, is £240,000. The present day replacement value would be £361,485.

Newsprint Prices in London

For spot lots of newsprint, delivered from London to the printers door in the provincial towns, agents are issuing quotations as follows:- Newsprint in sheets, any size to 22 1-2 inch by 35 inches, £13 1-2 a ton, larger sizes £1 extra; 13 1-4 in reels 23-24 lbs, D/cr. £14.-17. 6; 14 1-2 in. 21-22 lbs. £16-7s 6d.; 18 in £17 7s 6d.; 19 1-2 in £17 7s 6d; 25 in. £16 7s 6d; 36 in £17 7s 6d; 38 1-2 in. £17 7s. 6d.

One agent has 25 -100 tons of each line which he can deliver at once f. o. r. Another agent is selling 17 1-2 20 1-2, 40 1-4, 40 1-2 and 41 inch widths 20-21 D/cr. free on rail to any part, at £17 a ton. These are agents prices, but contracts are placed on a lower basis. These treal and New York.

French Hydro-Electric Power

Lately a good deal of informtaion is reaching London about the use of hydro-electric power in France. All accounts show that it is being used with increased quotations are worth comparison with those of Mon-appreciation and the papermaking industry, the first to introduce it, realise that the importance of hydro-electric power cannot be over-estimated. It is used in wood pulping, as well as papermaking, and where possible is being introduced,—or transmitted from a power station some distance away.

Raw Materials

Generally, the sellers of raw materials are feeling satisfied all round with the present state of business. The optimistic tone that pervades all classes, rags, waste, and pulpmen, is cheering and everyone seems to bear the one expression, viz., "We have turned the corner"——which is better than "standing on the corner of the street." As I wrote some weeks ago, the bogey stories that spring from Scandinavia at times are sufficient, if one believed them, to put one in the gloom. They are all dished out and eventually dished up for a purpose, which the hard-headed British papermaker treats as a "silly-season" rumpus from the blue. There is plenty of pulp to go all round and chemical is a shade dearer this week. Groundwood is unchanged.

The Forestry Branch of the Department of Lands and Forests was advised this evening that for the third time this season an accident had occurred to hydroplanes operated by the Dominion Air Board on the North Shore, and utilized by the Provincial Forest Service for surveying purposes and observation. Only meagre details reached the department, but these were to the effect that a forestry engineer had been injured in the crash, and that the machine was a complete loss. The message, which is addressed to Mr. Gustave Piché, chief of the Forestry Service, is dated from Godbout, September 21, and reads as follows:

"Accident to hydroplane, machine complete loss, and I am the only one injured, suffering from a cut near the left eye. Will be in Quebec on Saturday afternoon." (Signed) Methot.

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Burning Business---Incinerating Industry

By IRA G. HOAGLAND, Fire Prevention Engineer,
New York

Fire is both a boon and a bane. Uncontrolled, it blights, burns, consumes, destroys, devastates, wreaks havoc, incinerates, kills and maims, and generally lays waste to the creations of nature and man.

The destructiveness of fire, the economic devastation of it, is generally thought of in terms of the material damage wrought, the value of buildings burned, contents consumed, property destroyed.

Fundamentally, the value of human life is economic but concurrent destruction of it by fire is little thought of in that sense. It is felt as personal bereavement, not as society bereft of creative intelligences producers of wealth. And little thought is given — beforehand — to the economic havoc wrought by fire in business and industry; to the thousand and one things in the aftermath of a fire which try the souls of men.

It is fondly imagined, for the most part, that the insurance against loss by fire on the buildings of commerce and industry and their contents of merchandise and materials, "raw, wrought and in process of manufacture," will be full and complete recompense for loss by fire.

"I am insured to the limit. A fire won't cost me a cent. The insurance companies will suffer, not me" is the familiar chatter of honest but unthinking men— we are not considering the unmentionable kind that make money out of fires and flourish like the proverbial green bay tree because of rotten politics.

Of course the insurance companies will pay for the losses to buildings, equipments, merchandise, and whatnot in the way of material things, and, sometimes to income and profits. And the insurance companies while paying do not pay; the public pays the price. The insurance companies only collect and distribute money for indemnity. They do not suffer and are not expected to.

But who pays for the losses which are the inevitable consequence of the destruction of buildings, their contents and other things material; the impairment of prestige, the interruption of business, enterprise, contractual relations, dismemberment of organization and what not else?

A burned building is far more easily replaced than a burned business; and a wrecked works than an incinerated industrial enterprise.

That which makes business and industry are not buildings, merchandise, machinery and what else, but the organization of human intelligence. A fire burns a business building, or a factory. These and their contents may be replaced. But far too often the business and the industry, as such, are burned beyond repair. And if not that bad the scars are deep and unforgetable. Ask any honest man whose soul has been seared by fire.

There is not any insurance for the human distress, economic and otherwise, that follows a fire. It has been estimated that the uninsurable losses from fire equal the insurable losses. In other words, for every dollar of loss in property burned, which is insurable, there is a dollar of loss in business burned or industry incinerated, which is not insurable. These uninsurable losses are often referred to as interruption losses. Who may suffer them, with impunity? And for those who do, the future will deal with much more harshly than has the past.

There will be in the immediate future a fulsome renaissance of the ancient law of the survival of the fittest. Our once profligate nation will have to think of saving what we have; not building to burn and burning, building again. As a nation we have been profligate; but there are some particular exceptions.

The most signal exception to our national profligacy, and one which supplies a complete example in economic conservation of enterprise from the destruction and havoc of fire is the textile industry. The torch of the fire fiend, which has been laying waste the resources of our fair country to the extent of a quarter of a billion dollars annually for a number of years, touches the modern textile industry very lightly. Why?

Because the textile industry has been tried by fire, apprehends the economic havoc of it, appreciates the limitations of insurance and the vital need of fire control.

And how has it been done? By automatic control of fire by automatic water sprinklers which are opened by fire itself.

It would be impossible to operate the textile industry at all without automatic sprinklers. They are just as essential as the machinery of production and the sheltering buildings.

Why? Because the frequency of process fires in cotton mills, for example, is more than in any other kind of human activity.

But despite this frequency the cost of fire insurance in the modern cotton mill is less than in any other class of endeavor. And this has been brought about by automatic control of fire.

What it has done for the economic welfare of not only the textile industry, but also the paper and pulp, boot and shoe, woodworking and other principal industries of the country, automatic fire control by automatic sprinklers will do for any other class of enterprise. Fire controlled cannot wreak economic havoc, and the automatic control of it, and paradoxically, protects the vital spark of human endeavor from burning to ashes, and without quenching it.

To him who runs and reads it will suffice to tell that the greatest single factor of wholesale economic distress is fire uncontrolled and the greatest single factor for its control and consequent economic conservation is the automatic water sprinkler.

No longer does fire lay waste to some of the principal industries of the country as it did a quarter of a century ago, because the need of automatic control of fire has long since been realized, and the principle applied.

But fire lays waste generally thruout the country to an enormous extent, and more year after year.

What is the remedy?

Automatic control of fire? yes— to some extent.

But more than anything else, different thinking about fire.

This little flame that you could crush between your thumb and finger if given the opportunity, in the hands of a careless person, has the potentiality of devastating the city.

A good woodsman always puts out his camp-fire and cleans up his camp before he leaves.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Product

A-1 B-0 Humidity in Relation to Moisture Imbibition by Wood and to Spore Germination in Wood. S. M. ZELLER. **Ann. Missouri Botan. Gardens**, vii, 51-74, (1920); **Botan. Abs.**, vii, 59, (Feb. 1921). The moisture content of wood at various atmospheric humidities are represented, the temperature being held at 25 degree C. Graphs are given to illustrate the relation between moisture content and humidity, for sap and heart-wood both of longleaf and shortleaf pine. By testing at various humidities the moisture content of any one species of wood it was possible to approximate the fiber saturation point. The moisture-humidity curves of highly resinous samples illustrate the waterproofing effect of resin—especially above 50 per cent humidity. The germination curve for spores of **Lenzites saepiaria** illustrates the fact that spore germination is greatly accelerated when the atmospheric humidity is high enough to maintain fiber saturation of the wood. A humidor for maintaining constant humidity and temperature is described. It is provided with a dew-point apparatus for the determination of humidity, and a weighing device by means of which the samples can be weighed without opening the humidity chamber.—A. P. -C.

A-3; H-5 Process for Obtaining and Bleaching Textile Fibres or Paper Pulp from Plants. Fr. patent No. 516,789, O. B. BOUVERY and F. P. CONCORT, Algeria, Dec. 10, 1920. **Papier** xxiv, 258,260, (June 1921). The material may be first put through a stamping mill. It is then carded and subjected to the action of a solution of bleaching powder in water. As soon as the fibres are immersed in the bleaching liquor, a 2 per cent sodium carbonate solution or a 1 per cent sodium chloride solution is introduced through the bottom of the vessel in successive small portions. The quantity of this second solution which is used must be just sufficient to decompose the bleaching powder into hypochlorous acid and sodium hypochlorite without liberating chlorine. The nature of the fibre obtained depends on the length of time the solution is allowed to act. When it is considered the treatment has been sufficient, the fibres, are removed from the liquor allowed to drain, and air dried.—A. P. -C.

A-3, F-5. Pulp from Reeds and Straws. L. B. VON ORDODY and B. SCHOTTIK & CO. Ger. patent 345,401, July 14, 1918. Addition to Ger. patent 285,539. The plants are cut into strips about one meter long. The leaves are detached, steeped in water for about 21 to 30 days, dried and steeped again, and then subjected to a swelling treatment by placing them in an autoclave and treating with caustic alkali of about 0.6° to 1° Bé. strength at a pressure of about 3 to 4 atmospheres for one to one and half hours. The material is then treated with acidified water and cooked once or twice with fresh water. The fibers are washed with cold water and treated further in accordance with the process in the principal patent. — I.G.

A-4, A-5. Determination of Moisture in Bales of Wood Pulp. UNO ALBRECHT. **Pappers-Travaru Industritids. Finland**, i, Nos. 16 and 18, (Sept. 1 and 30, 1921). The French, English, and Finnish methods are encumbered with too many details and sources of errors. The author proposes a simpler method, whereby the samples are taken from a perpendicular line running from the base to a point near the center, the bale being considered as a rhombus instead of as a square in which a symmetrical distribution of moisture might be assumed. The perpendicular represents the average moisture in the bale. — P.B.

A-15. The Preparation and Properties of Cellulose Solutions. P. WAENTIG. **Papierfabr.**, xx, 359-361 (March 26, 1922). — Solutions of viscose do not change as rapidly, when properly prepared, as cuprammonium solutions. Cellulose is very senstitive to changes in bleaching conditions (temperature and concentration of liquor), and to treatment with acids and bases. Treatment of cellulose in the cold with strong lyes produces sharp changes in the conditions of solubility. When cellulose is cooked in dilute alkali, the viscosity of the viscose solution is increased, contrary to what happens with cotton. In order satisfactorily to explain the changes in the viscosity of the cellulose solution cognizance must be taken of changes of a collodial nature which occur in cellulose as well as those of a purely chemical nature. The difference in behavior between the two is explained as follows: the cotton fiber consists of molecular complexes of approximately equal magnitudes and the cellulose fiber of molecular aggregates of varying magnitudes. In boiling with dilute alkali the higher aggregates in both fibers are broken down. In the case of the cellulose fiber the small aggregates are dissolved out, and the latter process has a preponderating influence on the properties of the cellulose solution. — I.G.

A-15. Comparison of Wood Cellulose and Cotton Cellulose. S. A. MAHOOD and D. E. CABLE, Forest Products Laboratory, Madison, Wis. **J. Ind. Eng. Chem.**, xiv, 727-731, (Aug. 1922). The data given show that the wood cellulose most nearly corresponding to cotton (purified linters) is obtained by recooking "easy-bleaching" sulphite with soda and bleaching with 2% of bleach. The main differences between this sample and cotton lies in the amounts of furfural-yielding constituents and gamma-cellulose content. It represents the lowest yield on the original wood. Recooked, raw-cooked sulphite bleached with 3% of bleach does not differ greatly from the preceding and gives 6% larger yield. It is probable that the yield of cellulose suitable for asterifying could be materially increased by giving a light or raw cooked stock a bleaching treatment prior to cooking with soda. Chemically, alkaline cooking produces pulps less similar to cotton than do acid cooking or acid and alkaline cooking. Wood cellulose and cotton cellulose do not represent identical chemical aggregates, nor do wood celluloses obtained by acid cooking and by alkaline cooking. The checking of wood cellulose according to specifications for cotton is a questionable procedure. — A.P.-C.

A-15. Chlorinated Cellulose. CELLULOSE ET PAPIERS. Fr. patent 525,594. **Mon Papeterie Française**, liii, 103, (Feb. 15, 1922). Cellulose, oxycellulose, or hydrocellulose, in a finely-divided condition, is subjected to the action of practically dry chlorine gas at atmospheric temperature and pressure, for a length of time varying from 1 to 3 hours. It retains from 1 to 2 volumes of chlorine, and,in contact with air, will retain its chlorine for about 1 day. If protected from air and light, it can be kept much longer. — A.P.-C.

B. — Forestry

B-2.Popular as a Pulp Wood. SEURRE. **Papier,** xxv, 304-305(July 1922). A brief discussion of the advantages of the cultivation of poplar as a pulp wood. — A.P.-C.

B-2 Transplanting Tests at Silkeborg and Vemmetofte Forests. J. HELMS and P. WEGGE. **Forest. Forsogsv. Danmark,** v, 225-292, (1920); **Botan Abs.,** vii, 240, The article gives the conclusions reached as the result of experiments in grading and pruning transplant stock of **Abies normandica** and **Picea excelsa** carried out from 1915 to 1917.—A. P. -C.

B-2 The Scotch Pine. Rev. Eaux et Forêts lviii, 161-162, (1020); **Botan. Abs.,** vii, 110, (March 1921). Artificial reforestation of Scotch pine can be largely or perhaps wholly avoided by the clear cutting of long narrow strips, lying at right angles to the direction of the prevailing winds.—A. P. -C.

B-2. The Technique of Natural Reproduction, Formerly and Now. JULIUS EBERHARD **Forstwiss. Centralbl.,** xlii, 161-183,204-226, (1920); **Potan. Abs.,** vii, 15, (Feb. 1921). The author describes the development of silvicultural systems, beginning with the primitive irregular selection cutting, outlining Hundeshagen's Gayer's, H. Maper's, Gorggreve's, Engler's, Wagne's, Mayr's, Kubelka's and Kalitsch's systems. In the author's opinion the present German silvicultural practice (which has also been carried to Russia by foresters trained in German schools) is far behind that at the beginning of the nineteenth century. The prevailing forest form has changed during the last 200 years from a straight selection forest to extensive evenaged forests produced artificially. It is now returning gradually to a modified selection form, very much more intensively cultivated than formerly, with mixed stands and natural reproduction.—A. P. -C.

B-2 Silvicultural Excursion in the Home of the Langenbrand Wedge-Shelterwood Cutting. L.FABRICIUS **Forstwiss. Centralbl.,** xlii., 233-237,(1920); **Botan Abs.,** vii, 16, (Feb. 1921). The author describes the silvicultural system used by Dr. Eberhard in the Lengenbrand forest (Wurttemburg). This consists of a preparatory stage in which the strand is prepared for reproduction by repeated moderate thinnings, and a stage of removal cuttings beginning about five years after reproduction is established. The preparatory cuttings are intended primarily for getting rid of the raw humus, which may also be removed by hand either over the whole area or in seed spots. These cuttings also make room for reproduction, especially of tolerant species, to start. The removal cuttings are rather light and repeated every year if practicable. They begin in the interior of the stand and progress outward, beginning with small openings, which are gradually enlarged into a wedge shape with the point towards the wind. The shape of opening is not definite, but may be varied to suit local conditions. Damage from storms and logging is reduced to a minimum, and natural reproduction is very successful. Of the whole area, 92 per cent has been reproduced naturally. The principal characteristic which distinguishes this from certain other methods is the shape and arrangement of the cuttings so as to eliminate damage from logging and from wind.—A. P. -C.

B-9. French Resources of Pulp Woods. SEURRE. **Papier,** xxv, 248-251, (June 1922). An analysis of the French resources of spruce, pine, aspen, birch, poplar, and eucalytus, showing that the amount of these woods is sufficient to supply the requirements of the existing French pulp mills without interfering with the requirements for timber. — A.P.-C.

B-9 Pulpwood from Labrador. J. T. NOWLAND. **Sci. Amer.,** cxxiii, 156, (1920); **Botan Abs,** vii, 242, (April 1921). Descriptive of a belt of timberland on the Labrador coast some 400 miles long, which is accessible by navigable waterways to an average depth of about 30 miles. The timber consists chiefly of spruce (**Picea nigra**) and tamarack (**Larix americana**) from a few inches to two feet in diameter at the butt. It is suitable for pulpwood but of little or no value for any other purpose.—A. P. -C.

D. — Groundwood Manufacturing and Equipment

D-4. Care of the Pulp Grindstone Surface. RALPH K. PRATT, Wisconsin River Pulp & and Paper Co. **Paper Trade J.,** lxxiv, No. 24, 46, (June 15, 1922). — Practical pointers in the proper care of grinders so as to maintain the surface in as good conditions as possible to obtain maximum production and highest quality. — I.G.

D-4. Grinder. J. M. VOITH. Ger. patent 352,625. Same as Can. patent 219,713, June 20, 1922.

D-4. Grinder. J. M. VOITH. Ger. patent 352,626. In order to avoid lead in the pistons, two rods are provided in the machine, which are connected to the crosshead to which the piston rods are fastened. If one piston tends to move faster than the other, the reduction in the lever arm on one side and the lengthening on the other side equalizes the speeds of the two pistons and brings them back into equilibrium again. The piston cylinders being at a distance from the wood being ground, oil can be used in them without danger of soiling the wood.—I. G.

D-4. Improvement to Grinders. Fr. Patent No. 524,-103, EMIL SCHERRER, Switzerland. **Papeterie,** xliii, 839, (Sept. 25, 1921). Same as Ger. patent No. 338,767. See this journal xx, 14, D-4 Jan. 5, 1922. —A. P. -C.

D-0. The Story of Groundwood Manufacture. A. G. HOWLAND. **Paper Trade J.,** lxxiv, No. 15, 45-47, (April 13, 1922). The use of groundwood for paper making was started in Europe, it is claimed as far as back as 1756, and was introduced in the United States by Pagenstecher more than 50 years ago. Its development is traced since that time. — I.G.

E. — Acid Processes of Pulp Manufacture and Equipment

E-2. The Production of Sulphite Alcohol. R. HEINZELMANN. **Papierfabr.,** xx, (April 2, 1922); 438-443, April 9, 1922). Translation by C. J. West in **Paper Trade J.,** lxxiv, No. 21, 49-51 (May 25, 1922); lxxv, No. 1, 56-58, (July 6, 1922). A dicussion of the patent literature on the production of alcohol from sulphur waste liquor covering, (1) preliminary treatment of the liquor before fermentation; (2) fermentation, (3) distillation, and (4) recovery of by-products. — I.G.

E-2. Norwegian Process for Precipitating the Organic Matter in Sulphite Waste Liquor. F. PAUL. **Mon. Papeterie Française,** liii, 375, (Aug. 1, 1922) The lignin precipitated by the action of sulphuric acid under 6 to 7 atmospheres' pressure, the sulphuric acid being obtained by oxidation of the SO_2 present in the liquor. — A.P.-C.

(Continued on page 840)

PULP AND PAPER NEWS

Mr. Louis D. Hudon, Quebec, of the Ontario Paper Company, Limited, has joined the Purchasing Agents' Association of Montreal and district. The Canadian Convention of Purchasing Agents will be held in Montreal on October 7th.

The Annual meeting of the Canadian Pulp and Paper Association will be held, as usual, during the last week in January, in Montreal. That week promises to be an unusually busy one for the pulp and paper and lumber industries. In addition to the usual meetings of the forestry societies, the Canadian Lumbermen's Association will hold the annual meeting in Montreal, and it is also possible that the Canadian Forestry Association will meet during the same period.

The Eastern lumber trade is picking up. Very large orders for spruce for American account have been received, the great difficulty being to secure sufficient cars to give prompt shipment. From all parts of Ontario, Quebec and the Maritime Provinces, there are reports of business being held up on this account—in fact, many orders have been cancelled because goods could not be delivered on time. There are indications that the cut this season will be in excess of that of last year. Trade on the West coast is brisk, particularly in exports, and prices have been advanced.

Dr. J. S. Bates, of the Bathurst Company, Bathurst, N.B., was among those who attended the meetings of the American Electro Chemical Society, held in Montreal last week.

Mr. W. Gorman, Montreal Manager of the Provincial Paper Mills, Limited, last week visited Toronto on business.

Mr. Ellwood Wilson, chief forester of the Laurentide Company, Limited, Grand'Mère visited Montreal last week. Mr. Wilson, who has always been a strong advocate of the use of aeroplanes in connection with forestry work, is devoting considerable time to this work, particularly in relation to aerial photography.

On wednesday, September 20, the staff of the Howard Smith Paper Mills, Limited, and of the Federal Paper Company, Limited, entertained Mr. Paul G. Rodier, of the former Company, to dinner at the Queen's Hotel, Montreal. The dinner was to celebrate Mr. Rodier's approaching marriage to Miss M. Taschereau, niece of the Provincial Premier — to quote the menu card, "Paul's farewell to liberty". The marriage ceremony took plate at Quebec on the 26th inst. On Friday last Mr. Rodier was presented with a mahogany eight day clock, the presentation being made by Mr. T. P. Howard, Comptroller of the Howard Smith Paper Mills, Limited, on behalf of the staff.

The Bathurst Company, Limited, Bathurst, N.B., has commenced construction work on the newsprint mill, of concrete and steel. This is being built on a site adjoining the present pulp Mill. The capacity will be 50 tons per day, with provision for double that production.

Mr. S. R. Armstrong, General Manager of the Mattagami Pulp Company is visiting the plant at Smooth Rock Falls.

Enrolment of students for the special courses in Pulp and Paper conducted by the Institute of Industrial and Domestic Arts under authority of the Canadian Pulp and Paper Association is now in progress and men of all grades of educational experience are entering. Work has been commenced simultaneously in the St. Maurice Valley and Niagara Peninsula.

NEWFOUNDLAND MILL ASKS SUBSIDY

In connection with the proposed scheme for the development of the Humber Valley in Newfoundland, and Premier Sir Richard Squires' negatiotions in London for British support for a 235,000 horse power electric plant for the Humber River, a despatch to "The Gazette" says, the Paper Manufacturers' Association of Great Britain and Ireland has protested to the Trade Facilities Advisory Committee against the making of any Government grant, subsidy or guarantee intended to develop competitive newsprint mills in Newfoundland. The protest is based upon the ground of the present conditions and prospects of the British paper trade, with which, the association holds, the new overseas mills would compete. As a matter of fact, it is not considered likely in the business world here that the British Government will take any steps to assist the Humber Valley project until the Newfoundland railway situation is settled on a permanent basis.

The Gazette's correspondent is informed on good authority that prominent Canadians, and any others with interests in Canada, would be glad to see the British Government sending money to build up a great industry and relieve unemployment, either in Newfoundland or Canada, where any influx of capital is welcomed. No Canadians have borrowed money in the London market for over eight years.

OTTAWA OFFICIAL REPORTS MEN NEEDED FOR BUSH

That unemployment in Ottawa will likely be normal this winter is the opinion of C. S. Ford, superintendent of the Ottawa branch of the employment service of Canada. Mr. Ford says that demands for labor for the bush are already heavy, and they are having an appreciable effect on the wages being offered, which at present vary all the way from $26 to $40 a month, with full board and free transportation. In Mr. Ford's opinion, too, wages for bushmen will likely go higher still.

PREDICTS LIGHT CUT DURING WINTER

Angus McLean president of the Bathurst Company, Ltd., Bathurst, N.B., who was in St. John recently expressed an opinion that the lumber cut during the coming winter would not be heavy. He estimates that there will be little change from last winter. He bases this contention on the fact that lumber being sold at present is going at a loss and some of it had been piled up in their yards for a number of seasons. Asked about operations on the North Shore of the province he said that the mills are running about two-thirds capacity. While he considered it a bit early to make any definite predictions regarding the cut during the coming winter he believes that it will not be any larger than last season.

GOING UP!

Many men in the pulp and paper industry are sure to become leaders and to hold positions of responsibility. They will fit themselves for advancement by investing in Education. Write the Editor for particulars of correspondence cources in Pulp and Paper Making.

UNITED STATES NOTES

The National Bank of Commerce has made a computation of the copies of daily newspapers printed annually in the United States and of the number of trees it takes to furnish the wood pulp on which to print the newspapers. According to this estimate, one hundred newspapers are printed every year for each one of the 110,000,000 men, women and children in the United States. The quantity of paper used last year was two million tons, this does not include books, magazines or weeklies, only newspapers.

In a service order issued last week by the Interstate Commerce Commission covering preferential shipments eastward from the Mississippi, newsprint was added to the list of commodities to get priority movement. The Commission has also suspended until January 13 the operation of certain schedules. The suspended schedules propose both increases and reductions in the rates on paper and paper articles from numerous points in Michigan, Wisconsin, Minnesota, Illinois and other territories east of the Mississippi River, to points in Arkansas, Louisiana, Oklahoma.

The S. D. Warren Company, Westbrook, Me., has advanced the wages of its mill employees approximately 3 cents per hour. About 2,000 workers will be benefited by the increase. The mills, which had been operating on short time for more than a year, have been on full time since September 1.

George Allen, of Lebanon, Ohio, widely known for his researches in paper making and allied lines, ended his life with a bullet last Friday after he had shot and killed his wife. According to relatives, Allen had acted recently as though he was not in his right state of mind. His sister-in-law said he had been working on a new process of making wood-pulp which, besides being different from any now in use, would also prove much cheaper. Allen had been negotiating with Eastern capitalists for the sale of his secret process, and one report had it that Henry Ford had bought it, but had not yet paid Allen for it.

At a meeting called for this week stockholders of the Bryant Paper Company, Kalamazoo, will be asked to pass upon a new bond issue of $5,000,000 and to indorse an improvement program requiring an expenditure of most of the amount of this issue. The officers and directors of the company have planned to modernize the Bryant mill so that it will include every economy of tested merit known in the power and paper industry at the present time. The Milham division is to be expanded and improved, following the completion of the program projected for the Kalamazoo plant, and a central power plant will replace four now required for the Bryant, Superior and Imperial division. This vast construction and expansion plan is the outgrowth of an extensive survey of the properties of the Bryant Paper Company, requiring nearly a year's time, and conducted by V. D. Simons, of Chicago, and a corps of assistants. Mr. Simons is an engineer of acknowledged reputation and wide experience in the paper industry.

E. W. Elsworth, a pulpwood dealer of Watertown, N.Y., commenting upon the quiescent state of the pulpwood market at present, predicts that most of the newsprint mills in the United States will, in a few years be given over to production other than newsprint and that all the newspaper will then be made in Canada. "I prophesied 25 years ago that news mills would all go to Canada," says Mr. Elsworth. "While this has not entirely happened, the trend is strong in that direction. They must move closer to the source of pulp wood." According to Mr. Elsworth, fully 75 per cent of the pulp wood used in Northern New York mills is imported from Canada. The war time price, he says, ran as high as $40 a cord, but it is now standing firm at about $18.50 for four-foot peeled wood at the mill, and $2 more for two-foot rossed wood, delivered.

A large storehouse of the United States Paperboard Company's mill at Whippany, N. J., was destroyed in a recent fire which, by the time it was brought under control, caused damage to the mill and stored stock estimated at $50,000. This was the second fire within a year at the Whippany plant.

An elaborate and comprehensive program of social welfare work will be undertaken this Winter by the Kalamazoo Vegetable Parchment Company and the residents of its community. Edward S. Gilfillan, a well-known social worker from Portsmouth, Ohio, will have charge of putting into effect plans and methods which have been worked out in accordance with the ideas of President Jacob Kindleberger. A new community home has been completed and opened to the community recently. This handsome new centre of the community activities has served to stimulate a new interest in the company's endeavors along the line of social welfare.

The American Publishers' Association has issued a warning to members asking for 10 per cent reduction in news print consumption.

With the fuel supply problem considerably eased up during recent weeks, many of the paper and pulp mills of the Middle West which for a time faced shutdowns now appearable to get by without suspensions. There is every indication that nearly all plants threatened with fuel shortages can be kept going, even if the coal needed should have to be doled out on a rationing plan for a time. While there is still difficulty in some quarters in the matter of contracting for supplies in any appreciable quantities, enough special grade fuel at increased prices is available to plants that are absolutely out of coal, and that face the necessity of obtaining anything that may be had in the emergency to keep their fires going.

Johnston Best, Lewis C. Marryman and Gwendel Allen have incorporated in Maryland under the style, United States Paper Manufacturing Company with capital stock put at $3,000,000. They are planning to erect a modern paper mill in Baltimore, Md.

FOREST FIRES WILL HURT FUR INDUSTRY

Edmonton, Alta., Sept. 15.—Extensive forest fires in the north country will have a detrimental effect on the fur industry, according to J. Keith, manager of Revillon Freres' fur department, who has returned from an inspection trip in up country posts. As the fires were raging at the height of the breeding season, there is no doubt that the catch next season will be affected.

In some places the fires did considerable damage. This naturally drove the animals to safer scenes, as well as injuring the areas where the animals have had their accustomed retreats.

E-5, K-4. Process for obtaining Pulp from Slightly Lignified Plants. Ger. patent 327,912. The straw is cut, moistened to make it swell, washed with hot water, and treated with a calcium-magnesium bisulphite liquor containing 3 to 4% of total SO_2, of which 50 to 60%is combined. The temperature is brought to about 125°C, held for 3 hours, and finally raised to 150°C.-I.G.

E-3, E-5, G-9. Consumption of Steam in the Cooking and Drying of Sulphite Pulp. HARRY ALFTHAN. **Papir- Journalen,** ix, No. 15, (Sept. 25, 1921). The consumption of steam during cooking varies with the nature of the pulp, as follows: **easy-bleaching**; dry steam 1134 kilos per ton of air-dried pulp, dryers 306 kilos, spray 368 kilos, total 1808 kilos; **strong pulp,** dry steam 1238, dryers 321, spray 385, total 1944 kilos. Easy-bleaching thus requires 7.8% less steam than strong pulp, and production is about 4.5% greater reckoned per hour). — P.B.

E-0. Development of the Sulphite Process. O. L. BERGER. **Papier Trade J.,** lxxiv, No. 15, 49-53, (April 13, 1922). — I.G.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-2. Sulphate Turpentine. OSSIAN ASCHAN. **Papers-Travaru Industritids. Finland,** i, No. 19, (October 15, 1921). Finnish turpentine, is a by-product of sulphate mills, consists of pinenes (50%), of dipentene and sylvestrene (50%) at 173 to 176°C, fractional distillation yields a pure pinene turpentine of great technical value and high drying and polishing properties. — P.B.

F-2, F-4. Treatment of Waste Pulp Liquors. F. PASCHKE. Ger. patent 345,192. The liquor is evaporated by making it travel down a stack or tower divided into compartments provided with spiral passages. Hot flue gases enter at the bottom and escape at the top. — I.G.

F-4. Recovery of Caustic Alkali from Impure Liquors. Fr. patent No. 514,856, HOESCH & CO., Germany, Map 3, 1920. **Industrie Chimique,** viii, 368, (Sept. 1921). Waste liquors from certain industries using caustic alkalies contain considerable amounts of alkalies which are difficult to recover by the usual processes. They are electrolysed in the presence of a mercury electrode, and the alkaline amalgam obtained is decomposed by water. Anodes of platinum, nickel or silver may be used, and pure oxygen gas is obtained as a by-product. To prevent the mixing of the oxygen with the hydrogen that might be evolved at the cathode a porous diaphragm is used, the liquor being fed into the anode compartment and flowing through the diaphragm into the cathode compartment.—A. P. -C.

F-4; M-O Use of the Heat Pump (Steam Compressor) in the Evaporation of Water and Aqueous Solutions. H. CLAASSEN. **Z. angew. Chem.,** xxxiv, 233-235, (1921); **J. Soc. Chem. Ind.,** xl, 455A, (July 15,1921). (Compare this journal, xix, 867, M-O, Aug. 18, 1921). The compression of the steam generated by the evaporation of solutions so as to render it utilizable for heating the evaporators demands considerable expenditure of power for driving the compressor, and an additional disadvantage lies in the fact that a large amount of exhaust steam from the compressor itself has to be disposed of. Taking into account the high power-comsumption of compressors, their use does not tend to economize the process of evaporation unless a natural source of power, such as water, is available. A.P.-C.

F-0 The Development of the Soda Pulp Industry. M. L. GRIFFIN. **Paper Trade J.,** lxxiv, No. 15, 55-59, (April 13, 1922). — I.G.

F-0. The Manufacture of Paper Pulp by the Chlorine Gas (Cataldi) Process. UMBERTO POMILIO. **Chimie et Industrie,** viii, 41-45, (July 1922). Polemical against De Perdiguier, discussing the merits of the Cataldi process (See POMILIO, this journal, xx, 375, May 4, 1922.) as compared with the De Vains-Peterson process (See this journal, xx, 635, July 27, 1922). Poplar and hemp stalk pulps, prepared by the Cataldi process on a commercial scale, were tested at the Italian experiment station and found equal to the best grades of commercial bleached pulps prepared by other processes. — A.P.-C.

K. — Paper Manufacturing and Equipment

K-8. The Coloring of Paper. E. ARNOULD. **Papier,** xxv, 241-245, 289-293, (June and July 1922). A general discussion, from a strictly practical standpoint, of the coloring of paper by means of aniline dyes, with numerous pointers on how to obtain best results. — A.P.-C.

K-10. The Production of Sulphate of Alumina in the Sizing of Paper. F. M. BOUVIER. **Mon. Papeterie Française,** liii, 99-100, (Feb. 15, 1922). Extraction of sized paper with alcohol removes free rosin, and subsequent extraction with ether removes aluminum resinate. About 50 to 70% of the rosin in the paper is present in the free state, depending on the composition of the size milk. An example is given to show how to calculate the amount of size and of sulphate of aluminum required to give a paper containing a given amount of free rosin with water of given position. — A.P.-C.

K-10. Process for Sizing Paper or Cardboard. Fr. patent No. 520,103, ZELLKOLL G. m. b. H., Germany, Feb. 7, 1921. **Papier,** xxiv, 396-397, (Sept. 1921): **Monit. Papeterie Francaise,** lii, 645-646, (Oct. 15, 1921). Paper can be sized on the machine directly with animal size, even without the addition of rosin size, provided the animal size is added in a gelatinous form so that it will melt during the drying operation. The size may be hardened by suitable means according to the temperature at which the drying is conducted and the quality desired of the finished product.—A. P. -C.

K-12. Dryer Felt of Asbestos and Wire. Fr. patent No. 516,754, EDUARD v. ASTEN, Germany, Dec. 9, 1920. **Papier,** xxiv, 258, (June 1920). The felt is made so that the upper surfaces of the felt, which is in contact with the paper, is entirely composed of asbestos. A. P. -C.

K-12. Dryer felts made of Asbestos and Other Fibres for Paper Machines. Fr. patent No. 520,075, CARL VEIT FILIZTUCHFABRIK, Germany, Feb. 6, 1921. **Papier,** xxiv, 359-396, **Monit. Papeterie Francaise,** lii, 646, (Oct. 15, 1921). The warp threads of the felt are made of animal or vegetable fibres, and the filler is made entirely or partly of asbestos fibres.—A. P. -C.

K-12. Suggestion Regarding Paper Making Felts. Paper Trade J., lxxiv, No. 21, 51, (May 25, 1922). The advantages of standardizing felts to inches in width and feet in length are briefly dwelt upon. — I.G.

K-12. Development of the Paper Machine in Fifty Years. C. E. KINNE. **Paper Trade J.,** lxxiv, No. 24, 44-46, (June 15, 1922). A discussion of what should and what should not be done to and with felts so as obtain maximum service out of them. — I. G.

K-12. The Drying of Paper. Paper Trade J., lxxiv, No. 25, 46, (June 22, 1922). An outline of standard data to be used in the calculation of the efficiency of the drying process. A sample calculation data sheet is given. — I.G.

K-12. Technique of Water Marks. Kartonnagen Papierwaren Ztg., xxv, Nos. 33 and 34 (Aug. 13 and 20, 1921). The dandy roll, not being adapted for all the manifold applications of this art, is supplemented by various machines for stamping, cutting, embossing, and molding. Of all water marks, those made on thin smooth or colored papers need the greatest care to render them clear and durable. The up-to-date technique of mottos, figures in relief, engravings, designs, and new patterns on cards, wall papers, and boxes, is also described in detail, together with valuable hints on rules for avoiding waste and loss. — P.B.

K-12, K-6. Utilization of Exhaust Steam in Paper Mills. SAINTOURS-PAYERNE. **Mon. Papeterie Française**, liii, 268-269, 299-301, (June 1 and 15, 1922). The author briefly discusses the different systems of driving the paper machine and drying the paper, from the point of view of the heat balance. — A.P.-C.

K-12. Asbestos Dryer Felts. Papeterie, xliv, 546-547, (June 25, 1922). Brief discussion of their merits. — A.P.-C.

K-14. Process for Giving a High Polish to Paper. A. TIBURZI. Fr. patent 526,073. **Mon. Papeterie Française**, liii, 100-101, (Feb. 15, 1922). Also Ger. patent 532,213. The paper is moistened with a 10 to 12% solution of caustic soda or with a 50 to 60% solution of soda ash and calendered. — I.G.

K-14 Friction Calenders. R. MILLER. **Papeterie**, xliii, 586-588, (July 10, 1921). Brief practical notes on the use and care of friction calenders.—A. P. -C.

K-18 The Manufacture of Cardboard in France. AUGUSTE BICLET. **Monit. Papeterie Francaise**, lii, 430-434, (July 15, 1921); **Papier**, xxiv, 289-293, (July 1921). Description of the manufacture of cardboard, of the various grades and their uses, together with a discussion of the present status of the cardboard in France.—A. P. -C.

L. — Articles Produced from Pulp and Paper

L-4. Method of and Apparatus for Making Pulp Articles. M. JAEGAR assignor to ANCHOR CAP AND CLOSURE CORPORATION. Can. patent 221,953, Aug. 8, 1922. The pulp is supplied to a wire mold by forcing it by means of compressed air. When the article is sufficiently built up, compressed air is admitted to the inside of the mold, thus compacting and drying the fibers. The drying may be hastened by using hot compressed air. — AP.-C.

L-4. Machine for Making Paper Bags. L. W. WELSFORD, assignor to J. G. GATES. Can. patent 222,048, Aug. 8, 1922. — A.P.-C.

L-5. Resins and Resinous Substances from Cellulose. ZELLSTOFFFABRIK WALDOF and V. HOTTENROTH. Ger. patent 353,380, May 16, 1922. Cellulose is treated with acids such as sulphuric to convert it into products of a resinous character. The residues are converted into a decolorizing carbon. — I.G.

L-5. Properties of Vulcanized or Hard Fiber. RETZOW. **Kunststoffe**, xii, 49-53, (1922). Translation by I. Ginsberg in **Paper Trade J.**, lxxiv, No.21, 52-56, (May 25, 1922). Vulcanized paper finds applications especially in the manufacture of electrical devices, but also for boxes, trunks, containers, etc. It is made by pressing together layers of paper, with the interposition of such binding agents as shellac, bakelite, and other artificial resins. The most important factor is the pressure. It bears a definite relation to the physical, chemical and electrical properties of the finished product. The specific gravity increases regularly with increase in pressure. The Brinnell hardness depends on both the pressure and the thickness of the sheets, increasing with the pressure and thickness up to a certain maximum. The curves are not smooth but consist of a number of broken lines. Maximum hardness is produced at a pressure of about kilos (about 2,000 lb. per sq. in.). The breaking resistance, using the shock test on a notched sample, depends on the direction of the force. For the surface resistance, dielectric constant and resistance to breaking through of the voltage there is an optimum pressure. The resistance to heat increases as the pressure decreases. The water absorption of the finished product decreases as the pressure and the thickness increase. Of the chemical properties, only the acid resistance was tested, and it was found that the thicker the paper the less the absorption of acid. — I.G

M. — General Equipment

M-4. The care of Belt. Mon. Papeterie Française, liii, 145-147, (March 15, 1922.). Various formulas are given for the preparation of compounds for the preservation, glueing and cleaning of belts. — A.P.-C.

M-6. Electricity in the Paper Mill. W. W. CRONKHITE. **Paper Trade J.**, lxxiv, No 15, 61-63, (April 13, 1922). Brief outline of the development of the use of electricity in the paper mill in the last twenty years. — I.G.

M-12. Automatic Carbon Dioxode Indicator for Flue Gas. R. B. MacMULLIN, Mathieson Alkali Works. **J. Ind. Eng. Chem.**, xiv, 628-629, (July 1922). A description, with diagram, of an apparatus for the continuous automatic analysis of a gas mixture for one constituents, such as CO_2 in flue gas. The apparatus can be made with bottles and glass tubing, and can be assembled compactly in a wooden case 8 × 20 × 20 inches, provided with a window through which the readings may be taken. The instrument is accurate to 0.2% CO_2, and will record continuously for two days or more without need of refilling the scrubber or readjusting the zero point. — A.P.-C.

O. — Water Supply and Equipment

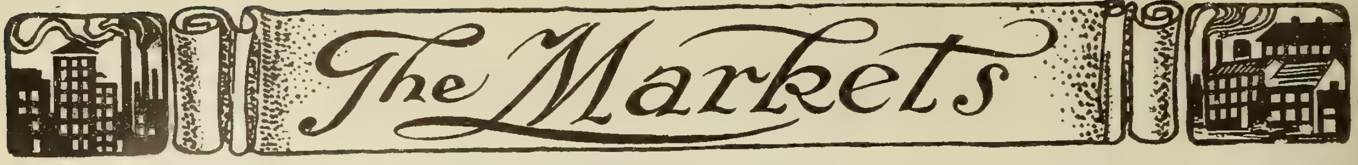
O-3. Water Used in the Paper Mill. HO. **Papierfabr.** xx, 290-294, (March 19, 1922). Discussion of the degree purity of paper mill water and the processes of purification used. — I. G.

R. — General

R-1 The Paper Industry in Roumania. Industria della Carta; Papeterie xliii, 592, (July 10, 1921). Brief sketch of the present status of the Roumanian paper industry.—A. P. -C.

R-2. Bibliography of Paper Making, First Quarter, 1921. C. G. SCHWALBE. **Zellstoff u. Papier**, i, 77-80, 106-108, (1921); **Chem. Abs.**, xv, 3395, (Oct. 10, 1921). This is confined principally to the German literature. — A.P.-C.

R-5. The French Colonial Paper Making Fibers. RAYMOND BOUVIER. **Papier**, xxv, 315-320, (July 1922); **Papeterie**, xliv, 681-690. (Aug. 10, 1922). An analysis of the French requirements in paper pulps and of the home and colonial resources practically available to meet these requirements with a plea for the co-operation of the French papers makers with the manufacturers of pulp from colonial grasses (esparto, rice straw, and especially bamboo) to give the latter a chance to demonstrate the value of their product. — A.P.-C.



CANADIAN TRADE CONDITIONS

Montreal, September 26.—The jobbers report that a moderate business is passing. The firms who specialize in printers' papers state that while some printers have a considerable amount of work in hand, others are doing practically nothing. There is a little more trouble with the printers' workmen. On the expiration of the agreement with the Montreal daily papers, demands for increased pay and shorter hours were made; it is understood that in every case, but one, an arrangement was made; the evening paper which declined is now an open shop and so far has published with regularity. Outside the printing department, the paper trade is good in nearly every department. Prices are not merely firm, there is a decided upward tendency, due to the higher cost of many raw materials. It will not be surprising if the advances in pulp, boards, waste paper, etc., are followed by rises in certain lines of paper.

Representatives of mills making tissues and toilets, writings, bonds, and ledgers state that the orders in hand are of a satisfactory character, that the mills are busy and that shipments of some descriptions are behind.

The export trade is keeping up very well, an encouraging feature being that prices, which are low, are begining to recover.

At the moment, the question of the future price of newsprint is the most interesting topic, as far as viewpoint is concerned. As American publishers are the chief buyers, the action of producers in that country naturally affects Canadian mills in a more or less degree. In that connection, it may be stated that one of the largest American mills is offering its customers the option of paper at $80. for the last quarter of the current year, or at $75. provided the customers will contract for their entire requirement for 1923, on an adjustable basis. Canadian mills are awaiting developments before taking action as to price, but if present conditions continue for few weeks, a rise in price for 1923 seems inevitable, although it will not be of such a drastic character as foreshadowed by some financial writers. The mills desire a stable market, with such orders as will keep the machines fully employed.

In our last issue we foreshadowed a further advance in box boards. This has now been put into force. The new prices show a rise of from $10. to $15. per ton. Thus No. 3 pulp chip and straw is quoted at $65. a gain of $15. filled board, non bending, $80. folding pulp board $90. and news board $80.; colored boards are up from $10. to $15. The higher values are caused by the advance in pulp, waste paper, etc., and there is a possibility that we shall see another rise in boards of all descriptions, in the near future. The board mills are very busy, most of them having orders which will keep them fully employed for several weeks.

There is a very strong demand for waste papers, and quotations are very firm. Rags too are in good request, while roofing felts are still selling well. Considerable quantities of felts are being shipped by Canadian mills to American consumers.

The pulp market is in good shape. Following the rise in European pulps, Canadian productions have considerably strengthened. The demand is distinctly better; groundwood was again advanced, $31 being quoted; sulphite is also stronger, while the orders for bleached are coming in at such a rate that some have been declined. Kraft pulp is moving upwards. There is likely to be still further rises, having regard to the fact that certain raw materials are becoming dearer.

A new clause in the Fordney—McCumber tariff will affect some Canadian mills. Wood pulp in rolls, for use in the manufacture of wallboard, is now taxed 5% ad valorem; in the original proposal, this was admitted free.

Its looks are if pulpwood will cost more. American mills are making more inquiries and dealers assert that they will no longer sell at prices which leave them little or not profit. Up to the present the buying has been on a comparatively small scale, although some dealers have been delivering on old contracts made at high prices.

Toronto Topcis

Local conditions indicate a fairly general, though not well developed improvement. Spottiness characterizes activity in many lines while others are working up more steadily. Western demand begins to show signs of realization on crops.

Collections continue unsatisfactory, but should shortly show improvement.

Very large fruit crops are being inadequately taken care of for lack of containers.

Freight is moving in heavy volume in this part of Ontario and noticeable amounts of soft coal being handled over the Niagara frontier.

Unemployment conditions are better than they have been for a couple of years back. The demand for men to cut pulpwood and lumber is high but until the harvesters return and go into the woods there is a shortage of help.

Market Notes

Groundwood — Situation is fairly strong, not so much due to present demands on capacity as to expectation that a shortage will develop as usual about this time of year. Prices about $30.00 to $40.00 at consignee's mill.

Sulphite — News grade is fairly steady around $55.00 f.o.b. shipper's mill. Book grade has had a marked advance and is now selling at about $65.00 f.o.b. shippers.

Bleached is very strong and is quoted around $95.00 f.o.b. shipper.

Sulphate — Steady at $70.00

Book and Writing — Fair demand, prices steady.

Bristols — After a few weeks of fair activity the demand has softened appreciably.

Paper Boxes — Demand improving especially from west, for Fall and Christmas trade.

Boards — Demand is fair. New price list in effect.

Wrappings — No. 1 Kraft, Carlots 8.15; B. Manilla, .05½; Fibre Manilla, .07; T. Manilla, .05¼.

Bags — Improving demand. Light Manilla, List, less 62½—7½—5%; Heavy Manilla, less 60%; Light Kraft, less 60—7½%; Heavy Kraft, less 50—10%.

Tissues and Toilets — No. 1 Manilla 20 x 30, .80; 24 x 36, 1.05. Natural White 20 x 30, .90; 24 x 36, 1.25. No. 1 Prime White 20 x 30, 1.10; 24 x 36, 1.55. White Sulphite 20 x 30, 1.00; 24 x 36, 1.40.

Paper Stocks — Active demand and scarcity keep prices up, especially in stocks for board. New Cotton Cuttings are also active.

No. 1 Hard White Shavings, $4.00; No. 1 Soft White Shavings, $3.75; Heavy Books & Magazines, $2.25; Ledgers and Writings, $2.50; No. 1 Kraft, $2.50; Newspapers, $1.40; No. 1 Mixed Papers, $1.20; No. 1 Miscellaneous, $1.15; No. 2 Miscellaneous, $1.10.

New Cotton Cuttings — No. 1 White Shirt Cuttings, 11 — 11½; Fancy Shirt Cuttings, 6 — 6¼; Canton Flannels Bleached, 9 — 9½; White Lawns, 9 — 9¼; Blue Overall Cuttings, 6 — 6¼.

Ropes and Bagging — No. 1 Scrap Bagging, $20.00; No. 1 Manilla Rope, 6—6¼; Mixed Strings, $20.00.

NEW YORK MARKETS

New York, Sept. 23 — (Special Correspondence)— Reports emanating from various corners of the paper industry continue to tell of increasing improvement in manufacturing and marketing conditions. There is no question but that the paper trade in the States is in a lively position. Demand is steadily broadening, and gives every promise of becoming even more active and voluminous as the year wears on, since the next several months invariably constitute one of the busiest periods in the year for the paper industry. Manufacturers report that they are securing large suplies of coal and thus are enabled to increase their production, which is certainly at the present time. During the past few weeks when mills have been badly handicapped by lack of sufficient coal a large accumulation of orders has piled up, and the average paper manufacturer is behind in deliveries, so that more production is necessary to stabilize the market and to afford manufacturers an opportunity to take advantage of the improving situation.

Prices are still in a rather irregular position. Many mills are refusing to quote on their product, preferring to fill existing commitments before binding themselves further, and it is thereof no easy matter to determine what market levels on some kinds of paper actually are. This situation applies especially to box board and book paper. Mills producing these commodities are probably further behind in deliveries than are other paper manufactureres, and buyers are experiencing much difficulty in placing orders calling for prompt shipments of either board or book paper. It is stated on high authority that board mills are sold up for some weeks to come; this is substantiated by the reports from local jobbers and mill agents who say that they have booked by far a heavier business in boards during the last few weeks than ever before in their recollection.

Board prices are firm, as would be expected under prevailing market circumstances. Eastern mills are quoting $60 a ton f.o.b. New York on plain chip, and from $62.50 to $65 on news board, and a good many manufacturers are unwilling to accept additional orders even at these high prices, asserting that they do not deem it wise business judgment to commit themselves further until they are able to materially increase their production. It is understood that board mills have been operating only at around 60 per cent. of capacity during the past month or so, or since the coal strike created such a shortage of coal that mills were unable to secure normal supplies, but this situation is being rapidly relieved and board plants are gradually turning out a larger volume of board.

Newsprint continues in a very firm market position. Many in the trade are speculating on whether or not there will be another advance in print paper prices this

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WOOD PULP

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AND

Finnish Wood Pulp Union
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year. A majority believe there will, and some are so bullishly inclined that they look several more jumps in newsprint quotations, these expecting that prices will be put up to 4.50 cents per pound at least before the close of the year. When one stops to consider the strong position of print paper this does not seem beyond the realms of possibility. Certainly mills are being pushed to turn out all the paper publishers are crying for, and there is every indication that consumption between now and the end of the year will be even heavier than during the past few months. Newspapers in New York are printing larger and larger issues, and circulation is growing, as latest statistics clearly show.

Fine papers are enjoying an increasing demand. General improvement in business is leading to a greater use of bond and ledger papers, and fine papers are moving in a volume that exceed what was considered normal prior to the war. Raw material conditions in the fine paper industry are none too favorable and are contributing to the firm price tone in this class of papers. Wrappings and tissues are improving in demand, as is usually the case at this time of the year, and quotations evince a hardening tendency. Book papers are firming under an expanding demand from consuming quarters, and book mills are by far busier today than they have been in many months. Machine finished book is quoted at around 7 cents a pound f.o.b. New York, and coated book at from 8.25 cents upward. The import tariff on casein is likely to have an important bearing on coated book paper prices in the near future.

GROUND WOOD—There is not much change occuring in quotations on mechanical pulp but prices are firm and a stiffening tendency is clearly apparent. Demand from various consuming sources is good and appears to be gradually assuming broader proportions, reflecting the increasing operations of newsprint and box board mills as well as other users of ground wood. Current prices range around $32 a ton f.o.b. domestic producing plants and this figure is being bettered in some cases where buyers are situated near to producers and a low freight rate is involved. Producers take a very confident view of the outlook and are not pushing pulp onto the market, evidently feeling that they will secure higher prices later in the year.

CHEMICAL PULP—A firm market prevails for chemical wood pulp of all kinds and price advances have been noted in some cases this week. The upward movement of values is slow and is therefore viewed as distinctly healthy, and dealers and importers in numerous instances express the belief that higher market levels will be reached during the next several weeks. Kraft pulp is especially strong in price, reflecting the big demand for this kind of pulp from board mills. Scandinavian kraft has sold at 2.65 cents a pound ex dock New York, and importers are reported in most cases to be asking 2.70 to 2.75 cents and to be showing little inclination to sell at lower rates. Sales of Canadian kraft of a quality considered about the highest produced on this Continent to mills in the United States at prices figuring out around 3.25 cents at the pulp mill have been recorded, denoting the stiff prices that consumers are paying for kraft pulp. Bleached sulphite is firm at between 4 and 4.25 cents per pound on the dock for No. 1 foreign, and from 4.25 cents upward at producing mills for No. 1 domestic bleached, while foreign No. 1 unbleached sulphite is reported bringing around 2.75 cents a pound ex dock freely. Bleached soda pulp is firmly quoted at 4 to 4.25 cents a pound at producing points, and it is said that mills making this kind of pulp are well sold ahead, some having contracted for their output for the remainder of the year.

RAGS—No decrease in the demand for roofing rags has been noted and this class of papermaking rag stock is still moving in proportionately larger volume than any other although other grades also are meeting with a splendid demand. Felt paper mills are paying around 1.45 cents a pound f.o.b. New York for No. 1 roofing stock, and an average of 1.35 cents for No. 2 packing, and in view of the big building movement all over the country and the resultant heavy consumption of building papers, the trade looks for a continuance of active demand for roofing rags for sometime to come. Old white rags are in good call, with quotations ranging around 6.25 cents for No. 1 repacked, and 4.25 cents for No .2 repacked, and there is a steady movement of new No. 1 white shirt cuttings at an average price basis of 11.25 cents a pound at dealers' shipping points. In fact, new cuttings of all description are in good demand with prices holding very firm and with some grades gradually trending higher.

PAPER STOCK—There are some reports of old paper being available at lower prices but this does not seem to be true in New York, prices in the local market ruling firm and on the uptrend under a consistently good movement of supplies toward mills. Folded newspapers have been a strong and active item this week, and sales to board mills netting dealers 1.20 cents a pound and higher have been noted. No. 1 mixed paper is selling at 1.05 to 1.10 cents f.o.b. this city, heavy No. 1 magazines at 2.60 cents, mixed books at 2.20 cents, old No. 1 kraft at 2.40 cents, white news cuttings at 2.10 cents, and ledger stock at 2.75 cents. Shavings are quotably steady at around 4.40 cents a pound for No. 1 hard white, and 4 cents for No. 1 soft white.

OLD ROPE AND BAGGING—The market price of old manilla rope holds firm at 6 cents to a quarter of a cent per pound higher f.o.b. New York on No. 1 domestic rope, and dealers are predicting an advance in values. Old bagging is in somewhat better demand though quotations rule unchanged at about 1.25 cents New York on No. 1 scrap bagging and 1.10 cents on roofing bagging.

PULP PRICES ADVANCE

There has been a marked strengthening of the whole pulp manufacturing situation in Canada within the past few days and since the above reports were received, the *Pulp and Paper Magazine* is informed that the Riordon Co. advanced the price of output nominally $10 per ton The high grade bleached sulphite has advanced to $100 to $105 per ton f.o.b. shipping point. This previously sold at $90 per ton.

Another grade of pulp made by the same company has been advanced from $80 to $90 per ton. The easy bleaching and unbleached prices have been a bit out of line for some time and it is expected that these will also advance in sympathy with the higher grades.

It was stated also that Brown Company said to be the largest pulp manufacturers on this continent, with mills in both Canada and the United States, have advanced their prices $10 per ton.

The whole situation has materially improved within the past few days, stated an authority on the pulp situation, and the Canadian mills will all stand to benefit. Scandinavian producers are now finding a better market in European countries for their surplus output with the result that the output which was coming to America and having an adverse influence on prices has been diverted.

With the Woodsmen

FINE LETTER FROM PRINCE TO HIS RANGERS

Circular To New Brunswick Wardens Re Barnjum Cash Prize of $250.00

Many of you have sent in Barnjum Prize Monthly Reports, but if you are one of those who haven't there is yet plenty of time to write a story of your experiences of May, June and July in one report. Your work and efforts will be appreciated. Mr. Barnjum recently told me he was pleased with your efforts and with the enthusiam you have shown towards his offer, and if the interest developed warrants it he will give a much larger and perhaps a second and third prize next year. I have assured Mr. Barnjum that you will appreciate his offer. So do your part and one of you will surely win the $250.00. Mr. Barnjum is devoting a large part of his time to arousing interest in developing better fire protection and conserving Canadian Forests.

He wants the ideas and results of the men on the fire line—the men who actually do the work and the men who get results.

While the winner will largely be judged by his work, the difficulties he overcomes, the sympathy he arouses amongst the people in his district, the sucess he has in making careless people careful with fire will count much—a written summary or report should be made.

A few suggestions to help you! Your report might contain an outline of a fire handled by you, showing amongst other things the number of hours after the time the fire was reported or discovered before you were on the job with men, how you organized your men—foremen, timekeepers, cooks etc., the equipment you took; trails, bridges, portages, telephone lines, canoes, lookout sites, cabins, tool caches, inspected, built, improved, painted or recommended for construction. Lookouts will eventually be built all over New Brunswick, and best location is important. If you have a lookout in your territory, say whether it is any good; if so give actual case. Do you think the observer prevents fire by the settlers knowing he is watching them? Has it made any difference in your district? Do you recommend them? The use of fire pump might be told of by those who have used them, slash burning torches by those who have them, fire signs that suit your district best, discussion with councillors, lumbermen or others which you have had and which afterwards prevented a fire or secured the listener's assistance or co-operation; the number of fire hazards of slash within 300 feet of the railroad or along a highway that you have eliminated; fire permits, how many you issued this year and what luck or damage; in how many cases you supervised the burning; how many did you refuse and why? Have you taken the name of fishermen and campers whom you met in your district, or how have you encouraged them to put out their campfires? Have you put out any unextinguished campfires this year? If so how many? How can these be prevented in the future? Your ideas and suggestions are of vital importance. Tell of some of the actual incidents that occured in your duties as fire warden and how you overcame them. Suggestions for changes and improvments for fire laws are also good material. Have you inspected all open burners and sawmills that are near forest land in your district? If so, how many have put spark arresters on or cleared up hazards around (this applies to mills within one-quarter mile of forest land)? Have you had any fires in your district from drives or dam builders? If so, how would you prevent them in the future?

I will do all I can to help any Ranger win the Barnjum Prize.

G. H. PRINCE,
Provincial Forester.

LUMBER SEASON BEGUN IN N. B.

The Fraser Companies, Limited, one of eastern Canada's largest lumbering concerns, have commenced cutting operations in the woods upon a scale sufficient to keep all their mills in operation next season.

Their cut for the Victoria mills in this city will probably not be up to the full amount of a season's operations, but they will buy enough additional logs to keep the plant going through the season, which means about 12,000,000 feet will be needed altogether.

For their mills on the Miramichi in pulpwood and long lumber, they will probably cut about 25,000,000 feet. To keep their plants there in full operation between forty and forty-five million feet would be necessary, but they count upon buying considerable quantities of pulpwood, thousands of cords of which has been piled in the province now for a year or more. Their cut on the Tobique this winter will probably be about 18,000,000 feet.

Donald Fraser says that unless there is some immediate improvement in the shipping situation, lumbering operations in New Brunswick will be considerably hampered. He said the car shortage was growing more acute, and was making it difficult, and in some cases impossible, to ship the product of the mills.

FALL MEETING OF T.A.P.P.I.

TIME: October 9 and 10, 1922.
PLACE: Hotel Wolverine, Detroit, Mich.

Program

Monday, October 9.

9:30 A.M. Business Session - George E. Williamson, Chairman.
Amendments to the Constitution.
Reports of Committees.
Vocational Education - R. S. Hatch.

2:00 P.M. Waste in the Industry - R. B. Wolf, Chairman. George D. Bearce, Vice Chairman.
Procedure:
Fiber Loss Through Mill Effluent.
Barking Drum Refuse:
Report of bark pressing tests.
Evaporative efficiency of bark.

7:00 P.M. Dinner.

Tuesday, October 10.

9:30 A.M. Sectional Meeting on Paper Testing - F. A. Curtis, Chairman.
Sectional Meeting on Drying Paper - F. C. Clark, Chairman.

Tuesday afternoon it is hoped that arrangements can be made for plant visits.

NEW NEWS PRINT PLANT

The Premier Paper and Power Company is preparing to install a standard newsprint machine in its plant at Hartville, N.S. The machine will have a capacity of 15,000 tons a year. In order to provide the necessary power, the company is making an additional development of 5,000 horsepower on the river.

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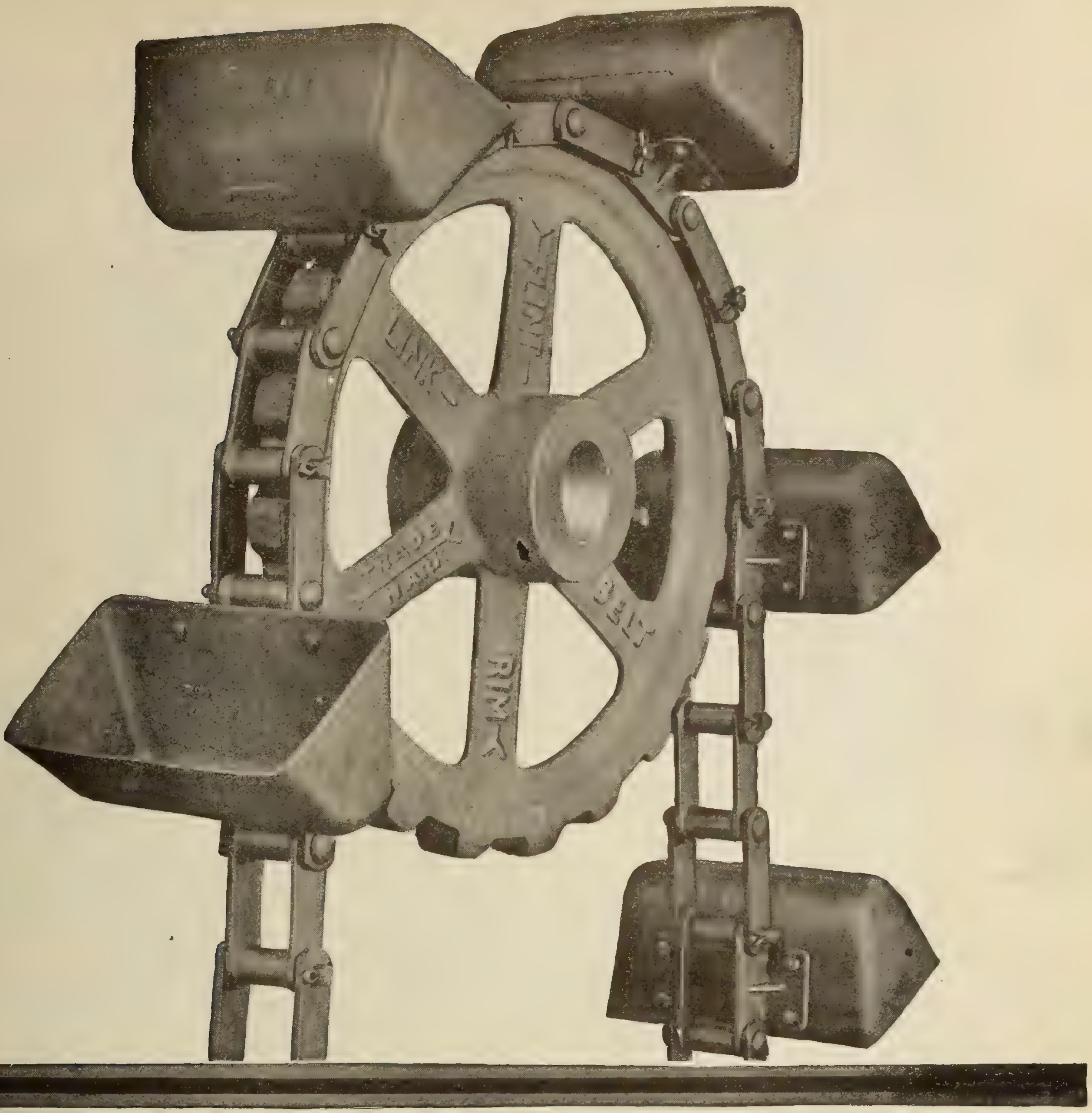

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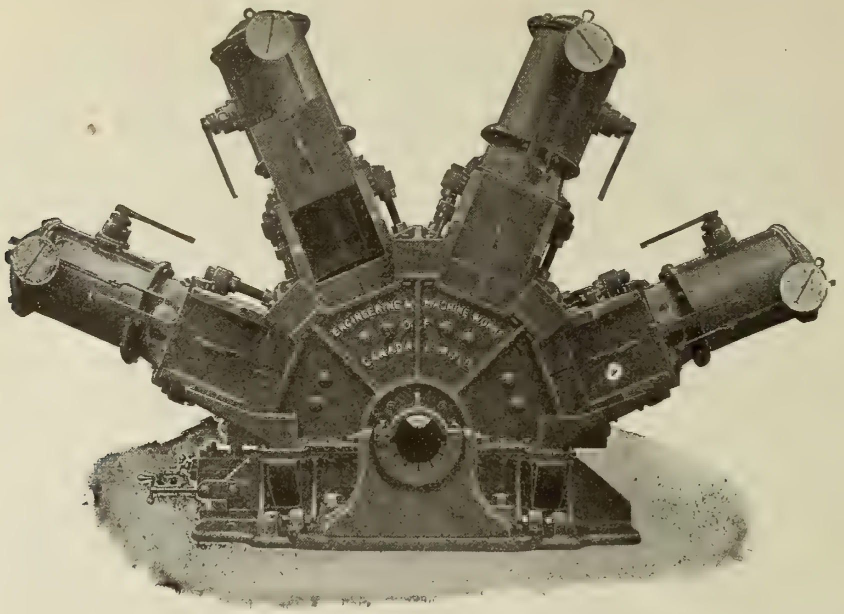

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For example — our wood pockets are wider and higher so they hold more wood and do not need filling so often. They are tapered lengthwise and crosswise so that wood cannot wedge in them.

Specially designed wood scrapers prevent the pulp from being reground in the next or following pocket into "flour pulp", which saves a botable percentage of waste from this source.

Extra large hand hole plates permit easy and rapid repacking in bottom cylinder head. Packing gland adjustable from outside of machine while grinder is in motion.

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Lignum vitae bearings cut in segments, held in position by ribs cast on bearing shell. These ribs are drilled to allow water from jacket to play on the shaft. All wear takes place on end of grain.

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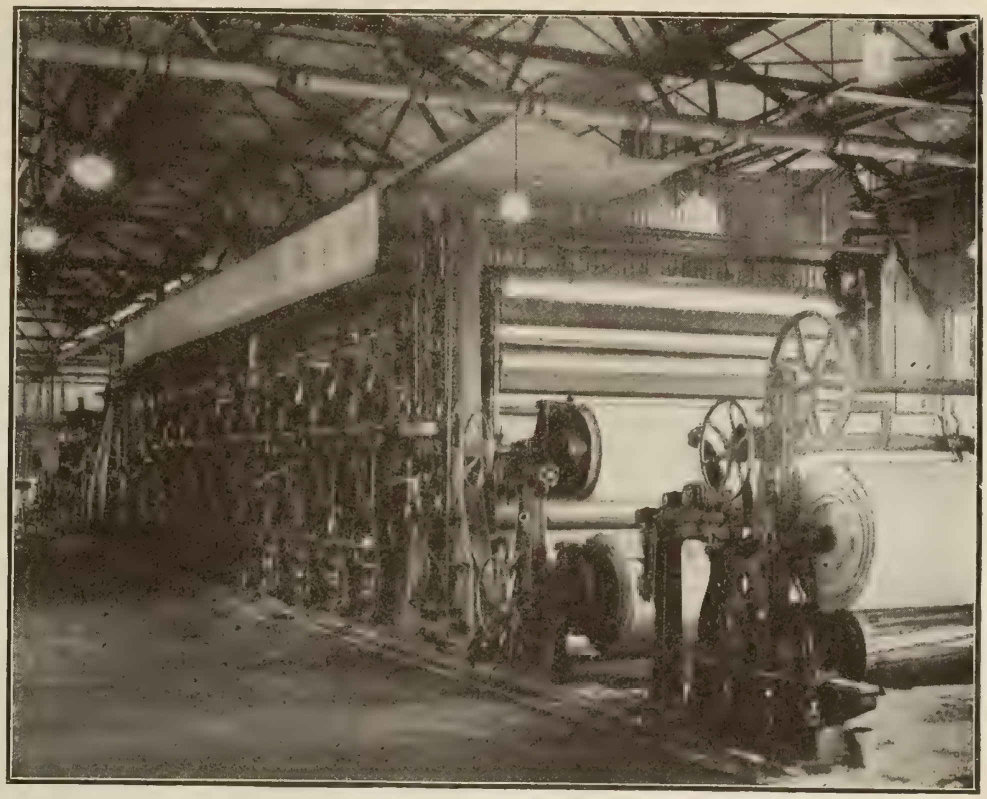

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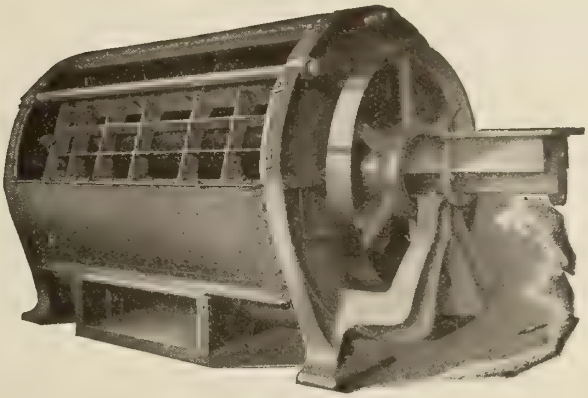

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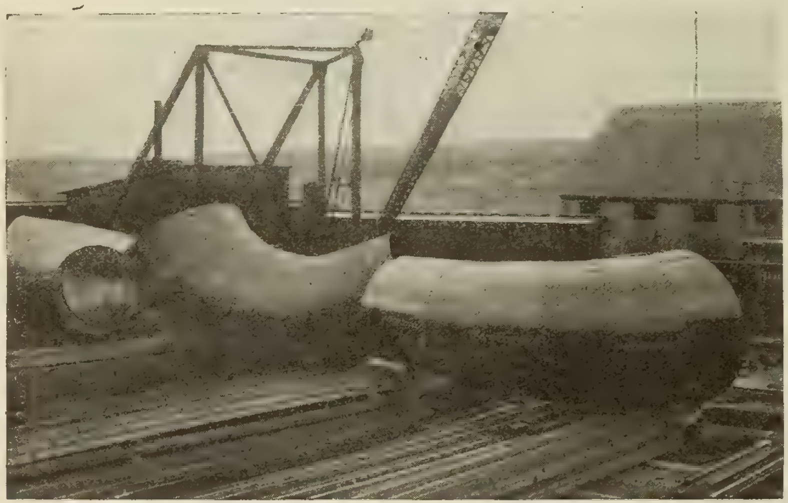

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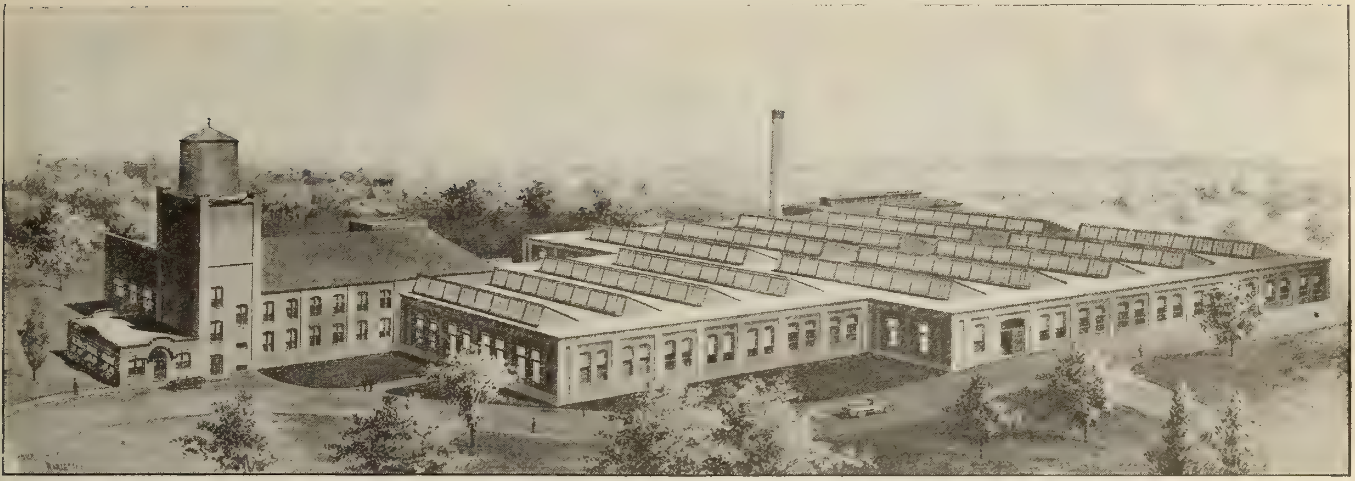

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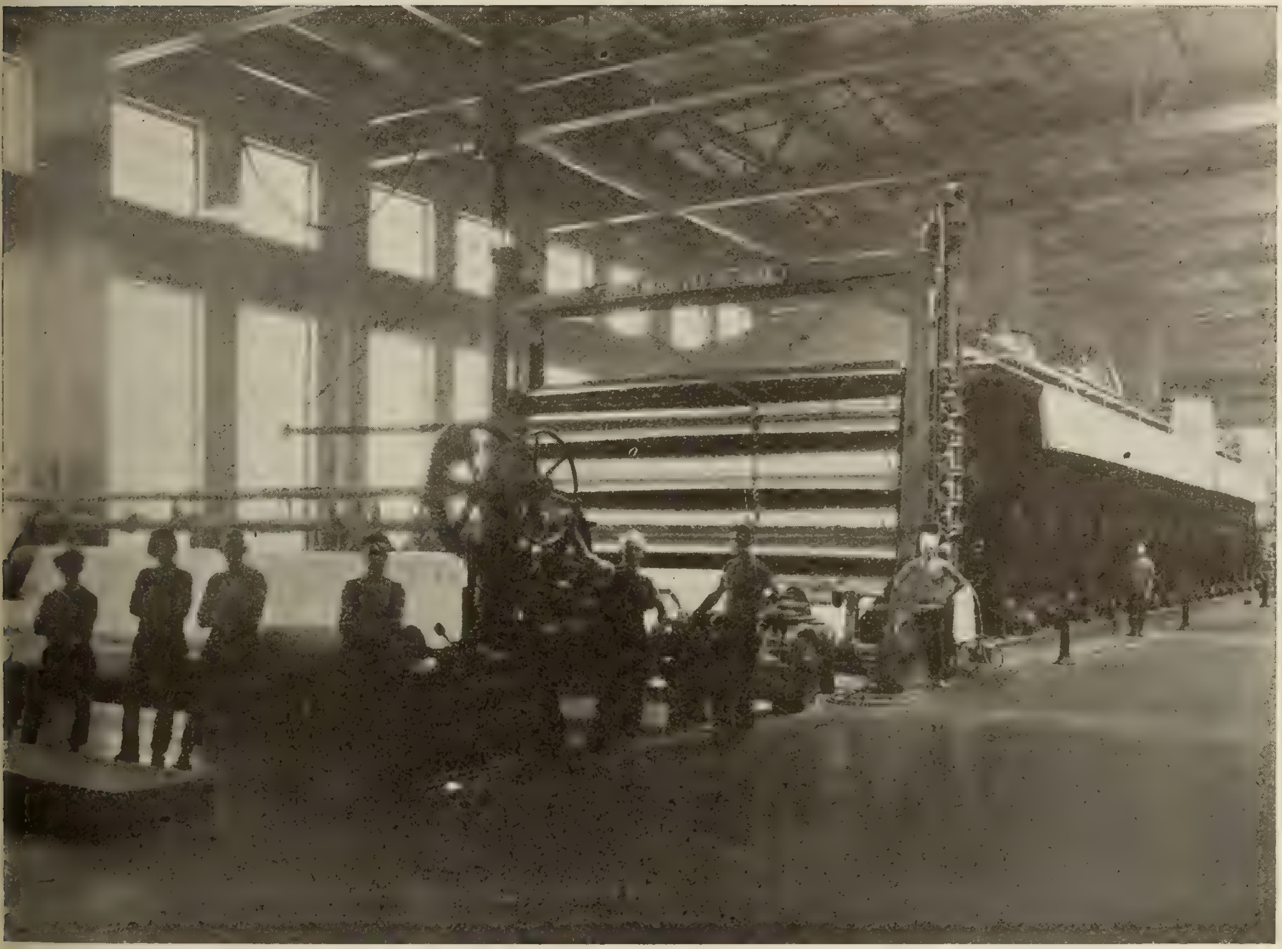

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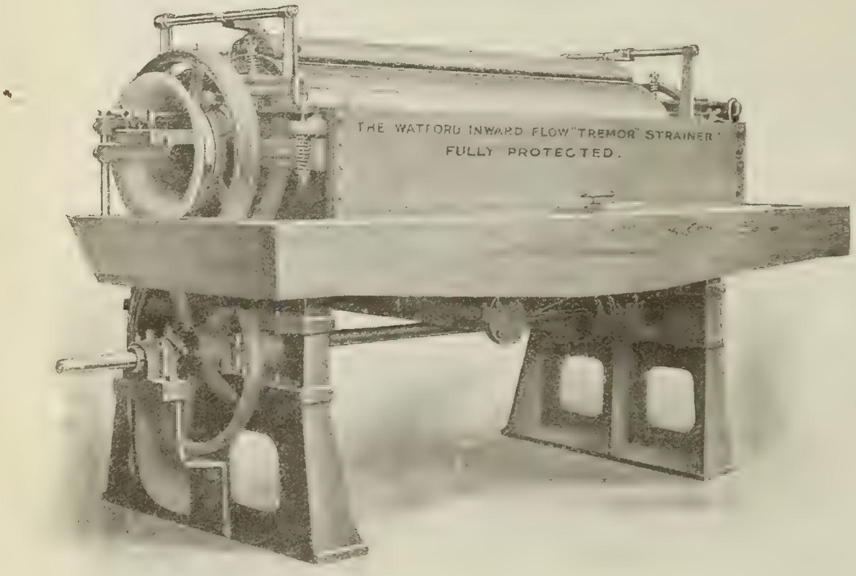

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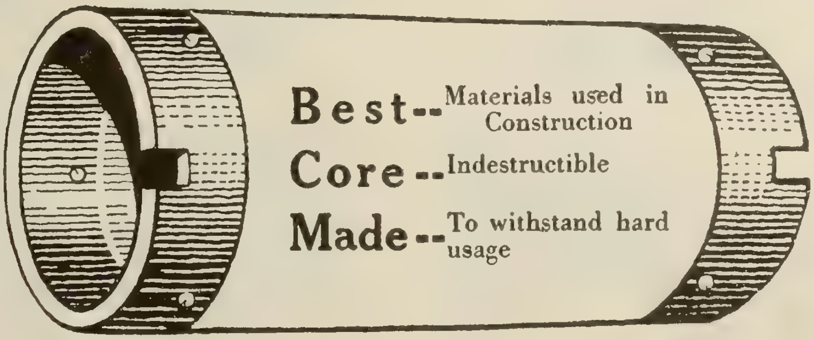
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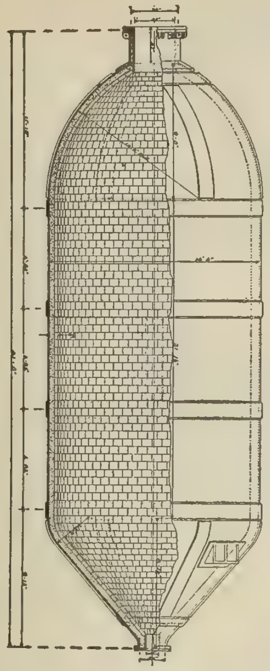

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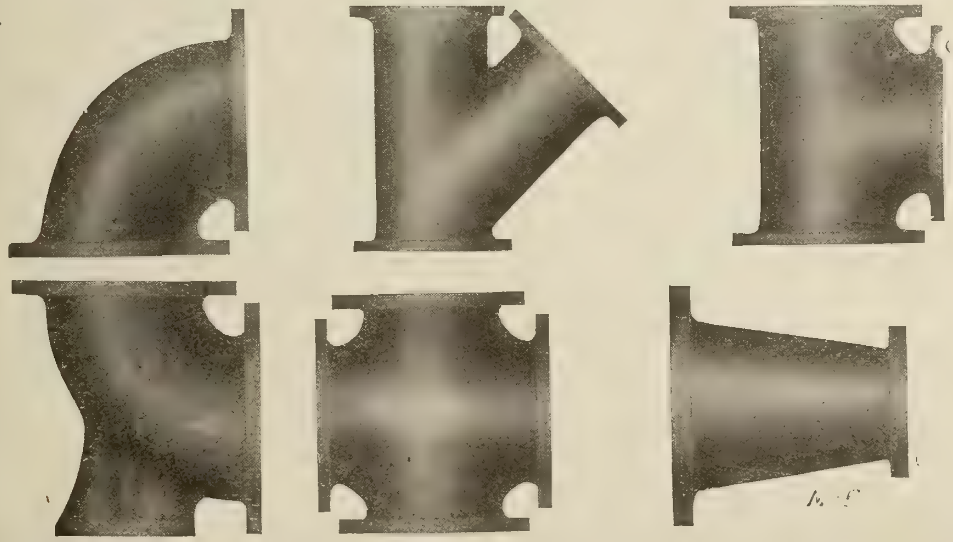

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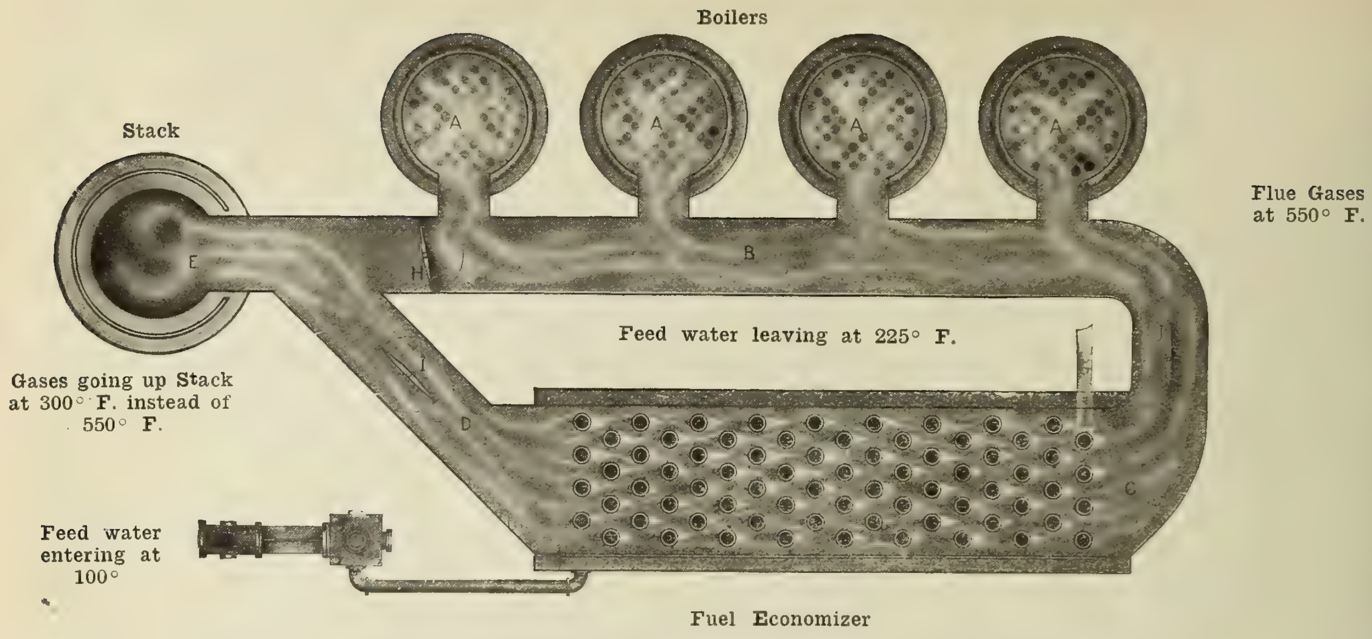
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A
A
A
A
Stack
E
H
B
Flue Gases at 550° F.
Feed water leaving at 225° F.
J
Gases going up Stack at 300° F. instead of 550° F.
I
D
C
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Fuel Economizer

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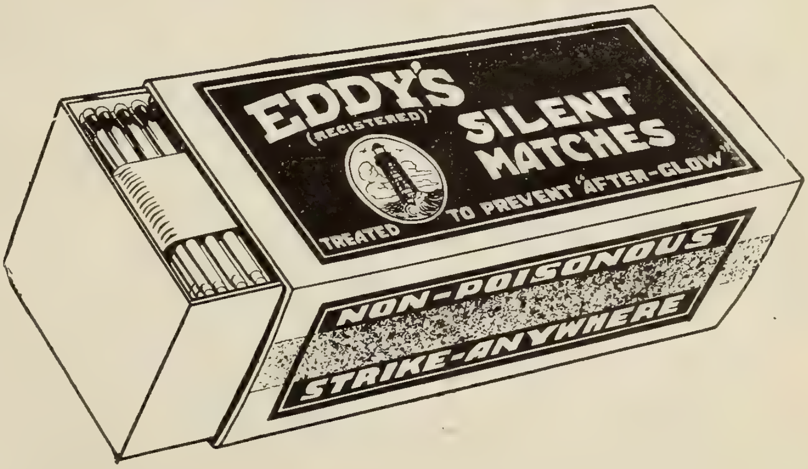

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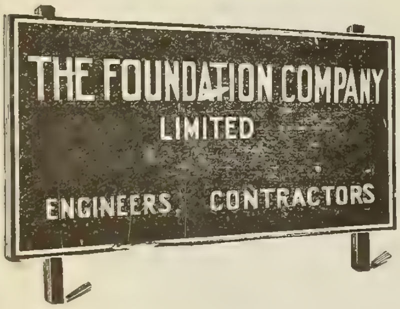

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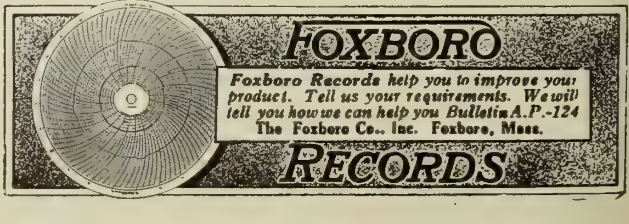

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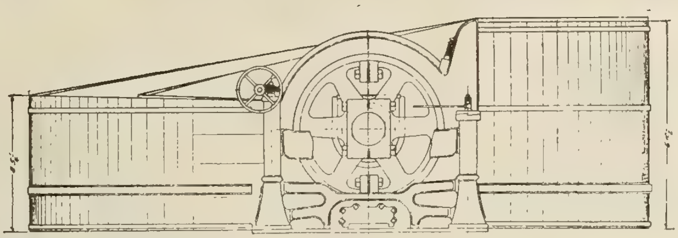

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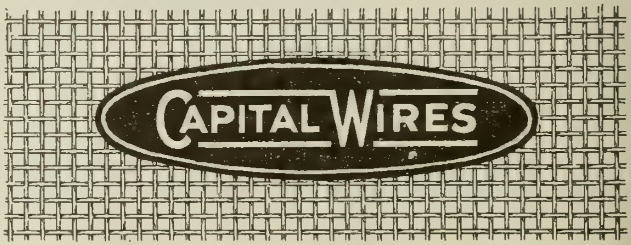

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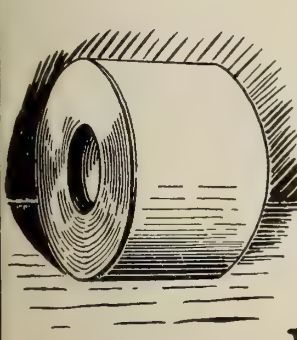

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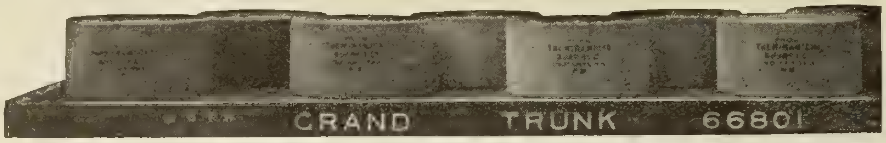

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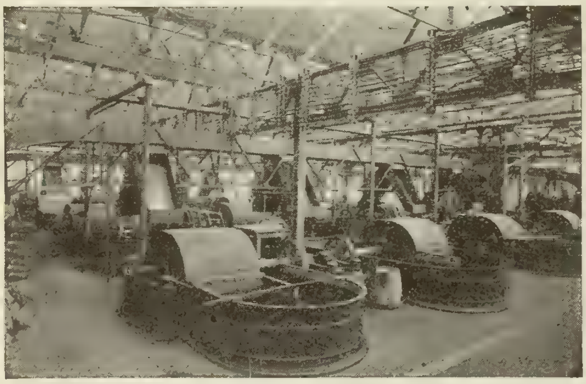

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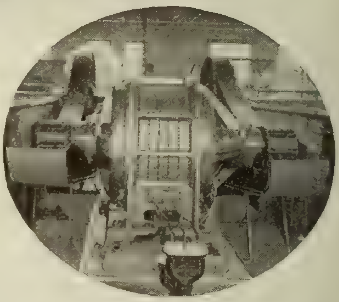

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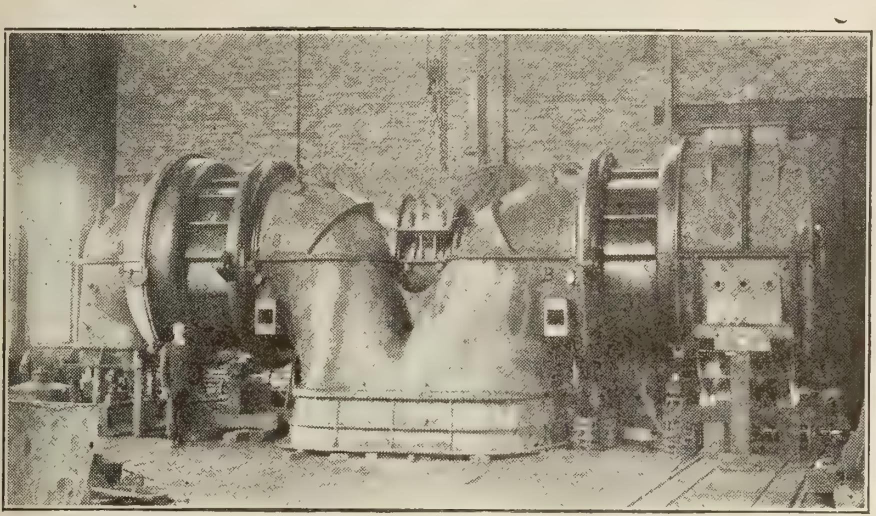

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VOL. XX. GARDENVALE, P. Q., Oct. 5th 1922 No. 40

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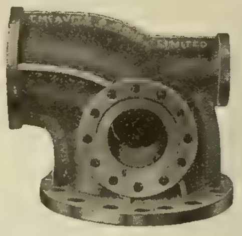

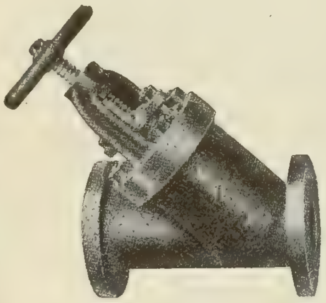

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-:- EDITORIAL -:-

TOO MANY CONVENTIONS?

Do we have too many conventions? Nearly every month in the year provides an opportunity for those interested in some branch or phase of the pulp and paper industry, to meet for the reading of papers, discussion of reports, and eating a banquet. Is it worth while?

Last month there was a meeting of the Technical Association in New York, incidental to the Exposition of Chemical Industries. At that time, manufacturers of machinery and equipment had an opportunity to explain their products. Paper makers were thus made acquainted with some new developments along these lines.

Next week there is the regular Fall meeting of the Technical Association at Detroit. The program is largely devoted to the consideration of the work of several committees that have been working on problems of great importance to the industry. One of these is the disposal of wastes, or rather the prevention of wastes. Another is the drying of paper, a subject that was introduced at the annual meeting last April. So many points requiring further study were brought up in the open discussion of the matter, that the committee had a lot of helpful material to proceed with and knew where to go for information and help. The importance of the committee's contribution to the good of the industry was strongly brought out by the enthusiastic discussion, which in fact, had to be interrupted by adjournment, and is now to be resumed.

Work of the kind that is being done by the technical men in the industry does not get properly across, merely by reading the report of the proceedings. It should be discussed by the men interested where questions can be asked and answered, and minor as well as major points of doubt cleared up. The same is true of other organizations within the industry. Each is contributing something definite to the good of the whole. The convention is as important to the inspiration of enthusiasm for the industry as the church is as a means of encouragement to the religious instinct of the individual.

So we change our question, "Is it not worth while?" Think it over. We say, "It is."

WELL DONE, NOVA SCOTIA!

At last, a Canadian province has proved its appreciation of the fundamental value of the forest to agricultural as well as to other industries. Trees have an important influence in moderating climatic conditions, in regulating stream flow, and in maintaining the water table where the roots of plants can reach the moisture required. The need of conserving the forests for the insurance of the wood using industries is well known. The farmer also needs wood for his houses and barns and for the churches, schoolhouses and stores that minister to him. Left to himself, a settler will often clear more land than he can cultivate, and more than one has taken up land merely to skin it of timber, leaving the slash to be a fire hazard and a breeding ground for bugs.

Nova Scotia realizes that proper cultivation of her cleared land will be more than her population can attend to. Then why clear more? The question is answered by the ruling that a halt has been called in the indiscriminate clearing of forest land in the Peninsular Province. Crown lands are withdrawn from sale or lease. The slogan for other provinces as well should now be, "No more forested land for settlement purposes." There is plenty of cleared land now going to waste in Canada.

Another instance of this growing appreciation of the value of trees is the case of a pulp and paper Company in Quebec, that is actually encouraging the growth of trees on what would be good farm land in order to insure a continual supply of wood to their mill and so provide employment in the future for the people in the town that has grown up with the mill.

THE NEW U. S. TARIFF

By the Associate Editor

In an interview, a few days ago, the Hon. J. A. Robb, Minister of Trade and Commerce, expressed the opinion that, while the Fordney tariff would disturb Canadian export trade, it would hurt the consumer in the United States as much as or more than, the producer in this country. He added that Canada would have to seek another outlet for her goods. We are glad that he went on to deprecate retaliatory tariff action on the part of the Dominion. For we believe that such action usually means little more than a cutting off of one's nose to spite one's face, as the saying goes.

It is, in the highest degree, probable that the new American tariff now coming into force will, as Mr. Robb anticipates, disturb this country's export trade, and that it will necessitate our looking for other markets for our goods, or, at any rate, for certain classes of our goods. But it will most likely be some considerable time before the effect of the tariff on Canadian exports will be indicated with any definiteness. And it would be unwise to attempt, in default of actual experience of its operation, to make any dogmatic forecast of its effects. For these things do not always turn out exactly in accordance with expectations that seem logical enough. For example, it is noteworthy that, during the three months ending last August, Canadian exports to the United States, affected by the latter country's emergency tariff, totalled $11,083,680 which represented an increase of $3,948,485 over the total for the corresponding three months of 1921. So that an improvement in Canadian exports affected by the emergency tariff bill has been manifestly under way.

At the same time, while Canadian exports to the United States for the three months ended last August showed a marked improvement over the exports for the corresponding months last year, they were more than $11,000,000 short of the total for the corresponding period of the year before when the emergency tariff, with its high rates, was not in operation. And, further, it must be borne in mind that the new tariff is a complex revision of the tariff of 1913, and is much wider in its range and scope, and covers a greater number of commodities, than the emergency tariff. Hence it would be unsafe to deduce, from our experience under the emergency tariff, the conclusion that, under the new, which, as we have just said, is one of far greater scope and range, our experience is likely to be along similar lines. As a matter of fact, we ourselves are persuaded that it is not.

Hence the advisability of seeking other markets in subsitution for, or as supplemental to, the large market to the south of us, is clear. Nor is there likely to be much difficulty in finding them. Quite obviously, Great Britain, for example, will, for the future, increasingly prefer to obtain such wheat as she needs from Canada which admits her manufactures rather than from the United States which refuses them. And as with wheat, so with other commodities. Further, Hon. W. S. Fielding, Minister of Finance, who is now in Europe, will, during his visit to that continent take the opportunity of negotiating a commercial treaty with France from which substantial benefit to Canadian trade with that country may be looked for with confidence. In a very little while, a Canadian minister is to leave for Australia to arrange a reciprocal commercial treaty with the Government of that country. The removal of the British embargo on Canadian cattle will restore to Canadian farmers a highly profitable market from which they have been excluded for a quarter of a century. Canada, in short, has found her own commercial feet. She is not tied, in any sense, to the commercial apron-strings of the United States. She is dependent on no one nation for a market for her goods.

Mr. Robb, as we have mentioned, expressed the view that the new tariff, while disturbing Canadian export trade, will hurt the American consumer as much as, if not more than, the Canadian producer. With this view we entirely concur. It is true that the trade position of the United States is, in many respects, almost a unique one by reason of the fact that, more than any other country, it is self-contained and self-supporting—that it is more capable of living with its own ring-fence, so to speak. Its commercial position is as different from Great Britain's, for example, as night is different from day. Great Britain lives by foreign trade, and without that foreign trade it would have no commercial importance or, indeed, existence worth speaking of. But foreign trade is of no such paramount importance in the case of the United States. That country, in fact, can restrict its foreign trade to the narrowest limits, and still flourish by means of the development of its own wonderful resources. Yet, granted all this, trade restrictions, so unnatural and marked by such monumental artificiality, as those for which the new tariff is responsible, must strike a blow—and, in all probability, a heavy blow—at the general prosperity of the citizens of any country that adopts them. That, at any rate, is our own firm conviction and it is one which we conceive to have the confirmation of the economic experience of the world. If foreign competition is utterly eliminated in the home market—and it looks to us, speaking generally, as though the new tariff will have an effect approximating to this—then the domestic consumer is bound to suffer by reason of the higher prices he must pay.

The United States is, in effect, closing its markets for numerous classes of commodities in the case of Great Britain and other European countries. It is doing so, presumably, with the object of affording relief to its own very formidable unemployment situation. But it is impossible for it to act thus without interposing a practically insuperable barrier to mutual trade between itself and other nations. In particular, the new tariff will constitute an obstacle—and one which may well prove insurmountable—to the repayment of European debts due to the United States. The claim, arising from the joint enterprise of the late war, on the Allied peoples on which the Government of the United States is insisting, is one of the principal obstacles to the rehabilitation of Europe and of the world. This is a fact that is patent to every unprejudiced observer and one might almost say to every thinking man. Yet, while insisting on this claim, the Government of the United States, in its new tariff, is making it out of the question that it shall be paid in goods. This attitude is bound to add very greatly to the immensely difficult task of the rehabilitation of Europe and the world. Further than this, in our considered judgment, the new tariff cannot fail to accentuate gravely the embarrassment of the United States' own situation caused by that country's overwhelming creditor position in its relation to the other chief countries of the world. In short, we regard this tariff as almost certain to defeat its own object, which we take to be the stimulation of American industry, as calculated to retard the payment of the debts due to the United States from the Allied nations and as certainly tending to postpone the due rehabilitation and stabilization of the countries of Europe

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Newspaper headline says "5 VIOLENT DEATHS DURING WEEK END: THREE WERE HURT: We'll say they were!

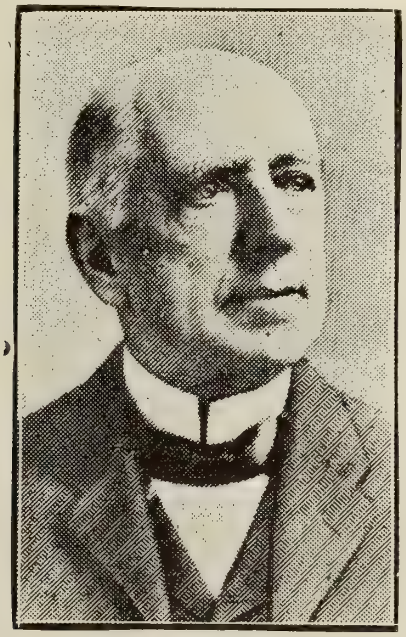
Fascinating Story of E. B. Eddy Co.

(From the "Ottawa Citizen", June 10, 1922)

"From small acorns great oaks grow." This is an illustrative story of the genius of a man, the late Ezra Butler Eddy, the founder of the mammoth industry at the Chaudière which bears his name; a man whose courage and indomitable spirit surmounted almost impassable obstacles; who overcame financial difficulties that would have ruined one less resolute and resourceful, and whose name will go down from generation to generation throughout the Dominion as one of the great industrial builders of Canada.

Seventy-one years ago, when Mr. Eddy came to Hull, then little more than a backwoods settlement, from Vermont, he was only twenty-four years of age and was as poor as the proverbial church mouse. But he was blessed with splendid business ability, and when he rented a small shack on the Hull bank of the Ottawa river, just below the mighty Chaudière Falls, in the spring of 1851, just a year before the arrival of John R. Booth on the Ottawa side of the river, he realized with unerring foresight the wonderful opportunities at his hand.

That small shack in which he started out to make matches—the old "telegraph" sulphur variety—at the rate of ten or less cases a day, was the foundation stone of the vast organization of the E. B. Eddy Company of Hull, the largest manufacturers of matches, paper, paper bags, indurated fiber ware, wood pulp and sulphite products in the British Empire today.



THE FOUNDER
The Late Mr. E. B. Eddy

Today the Eddy brand is known not only wherever the Union Jack flies, but throughout the civilized world, whether on reels of paper devoured by eager printing presses, or on match boxes found in homes, clubs, hotels, cottages or palaces, wherever men smoke tobacco or housewives light the hospitable kitchen fire, and the story of growth of the company is one of the romances of industrial development in America.

The Founder

Born on a farm near Bristol, Vermont, in 1827, Ezra Butler Eddy, the founder of the E. B. Eddy Company, began his business and industrial career in the United States. At the age of fifteen years he left his home town for New York, where he became apprenticed to the retail trade and within a short time rose to a responsible financial position, owing to the business acumen he displayed. After his New York training he returned to Vermont, where, with the money he had earned and saved, he went into business for himself, buying and selling dairy products, of which he made a success. But he had visions of a greater future, and in 1851 turned his steps towards Canada, arriving at Hull with very little money but fired with ambition.

He achieved success from the start, owing to the knowledge he had gained of the retail business during his early training, and step by step he pushed onward, availing himself of every opportunity until his dreams of industrial pre-eminence had become a reality. Every Eddy product today bears the hall-mark of his originating genius for he inspired those who followed him after his death, which occurred on February 10th, 1906, so that today the great industrial establishment is one of the most flourishing on the American continent.

George Millen

Mr. George Millen, aged 84 years on October 23rd last, but "just as young as I used to be," to use his own words, is today the guiding genius of the great E. B. Eddy industry at the Chaudière, of which he assumed the presidency following the death of the late W. H. Rowley. He came to Hull from Glen's Falls, N.Y., his native town, fifty-six years ago, at the request of Mr. Eddy, who at that time had nothing but a small match factory and pail shop, and was his chief adviser and executive up until the death of the latter in 1906. Despite his years, Mr. Millen, who is a veteran of the American Civil War, in which he was wounded, is as active and vigorous as many a man years his junior, and since his first connection with the business has never been away from it for more than two weeks at any one time. For many years he was joint manager of the plant, and largely to his executive ability and inventive genius the wonderful progress of the world-famous concern is due.

FOR I'M JUST AS YOUNG
AS I USED TO BE.

THE PRESIDENT
Although Mr. Geo. Millen has seen 84 years go by, he is still a youth. He says so himself and the artist corroborates it.

To the writer who called upon him in his office at Hull the other day, Mr. Millen, in reminiscent mood, recalled the early days of the late Mr. E. B. Eddy, the business as it used to be in those days, and the wonderful strides it made as the years went by and it broadened out until today it is one of the foremost industries of its kind.

The Early Days

"Mr. Eddy came to Hull in 1851, when he rented a small shack belonging to the Wright family," said Mr. Millen, "and started in to manufacture matches. His output during the first five years or so only amounted to about ten cases a day and he used to peddle them for sale himself. In 1857 he increased his business by the manufacture of wooden pails and clothes pegs, for which he had a good sale. He used to dry the clothes pegs on "Table Rick," where 'A' mill now stands. He gradually increased his output of matches until he was selling thirty cases a day. His matches he would ship via the Rideau canal to Kingston, Belleville and Toronto and then set out, driving his horse and rig as far as Hamilton, selling cases en route and replenishing his store from the shipments at the different places to which they had been sent. These matches were of the old sulphur 'eight day' or 'telegraph' variety.

"When I came to Hull in 1866 I took charge of a small mill he had rented from the Wright family, and was retained at $3 per day, paid in gold, as greenbacks in those days were only worth fifty cents on the dollar. The match business was then 'flourishing'. We were making thirty cases a day and turning out quite a large amount of wooden ware, principally clothes pegs and washboards. We had machines which cut the match splints and we used to put them in wooden racks, which were drawn in rigs to Wellington street, where their heads were dipped and they were packed by girls. We did not have the expensive and intricate machinery for making them in those days that we have now. The composition for the heads of the matches had to be put into jugs or pails, which were closed and held by a man between his legs while he sat on a spring board and jumped up and down so as to mix it —for it was mighty dangerous to handle with the hands.

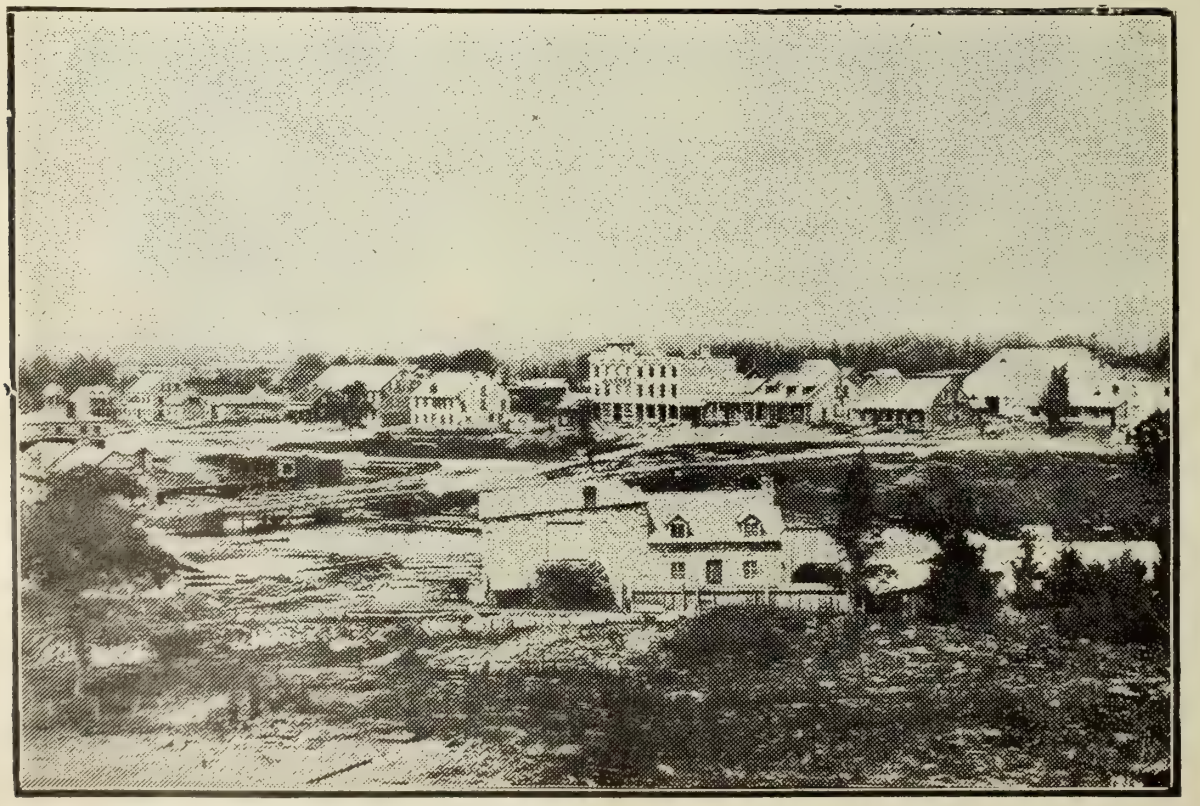
Bought Saw Mill

"In the fall of the year '66 Mr. Eddy had progressed to such an extent that he purchased some property from the Wright family, on which he erected in the following spring what was then one of the largest saw mills in the country. He also bought some timber limits in order to obtain a plentiful supply of lumber, with money he borrowed in Ottawa from friends. In 1870 he bought from the Wright family the island upon which our present match factory stands, upon which there was a small building, which he greatly enlarged, and by 1880 we were manufacturing 125 cases of matches a day and sawing in our mill from fifty to seventy-five million feet of lumber a year.

Branching Out

"As Mr. Eddy made money, he put it into his business, in 1882 starting a match factory in Ogdensburg, which was later sold to another company. At this time he found it was rather expensive to handle his timber limits, owing to their distance from the plant at Hull, and he got rid of most of them, devoting the output of his saw mill to the needs of his own business and curtailing outside sale.

"In place of the saw mill industry Mr. Eddy decided to go in for the manufacture of pulp and paper and in 1886 he bought the rights for the manufacture of indurated fiber ware. He then found that it would be necessary either to buy necessary pulp or manufacture it himself. A mill was later erected, in which were installed



This picture contains a view of the Eddy plant in 1867. The roof of the match factory may be seen just above the tree at the left. The central structure in the background was the E. B. Eddy Store. This was the main business section of Hull in Confederation days.

two grinders for crushing wood to pulp, and the erection of the present sulphite mills followed in 1888, when Mr. Eddy conceived the idea of making chemical pulp, and after some negotiation succeeded in buying the patents of what was known as the 'Mitscherlich' or slow-cook pulp, named after its inventor. We then manufactured sulphite pulp, which was mostly shipped to paper mills in the United States, as very little paper was being manufactured in Canada then.

When Eddy Got Even

"In connection with our U. S. trade and illustrating what a name Eddy pulp had made for itself, even in those days, I must tell you a little story:

"We had shipped two carloads of the sulphite pulp to the Mayo paper mill in Lawrence, Mass., when we were surprised to receive notification from Mayo that it was not according to order, and he, therefore, would not accept it. Mr. Eddy, after consulting with me, decided to go to the Mayo mills and find out what was wrong. Accordingly he did so and on arriving there, finding Mr. Mayo was not around, he strolled over to the paper mills, where he saw some of the Eddy pulp being used. Accosting the superintendent, who was unawere of his identity, Mr. Eddy asked:

" 'What is that you are using there?' pointing to the pulp.

" 'Why, that is chemical pulp we are getting from Canada,' replied the superintendent.

" 'How do you find it,' queried Mr. Eddy.

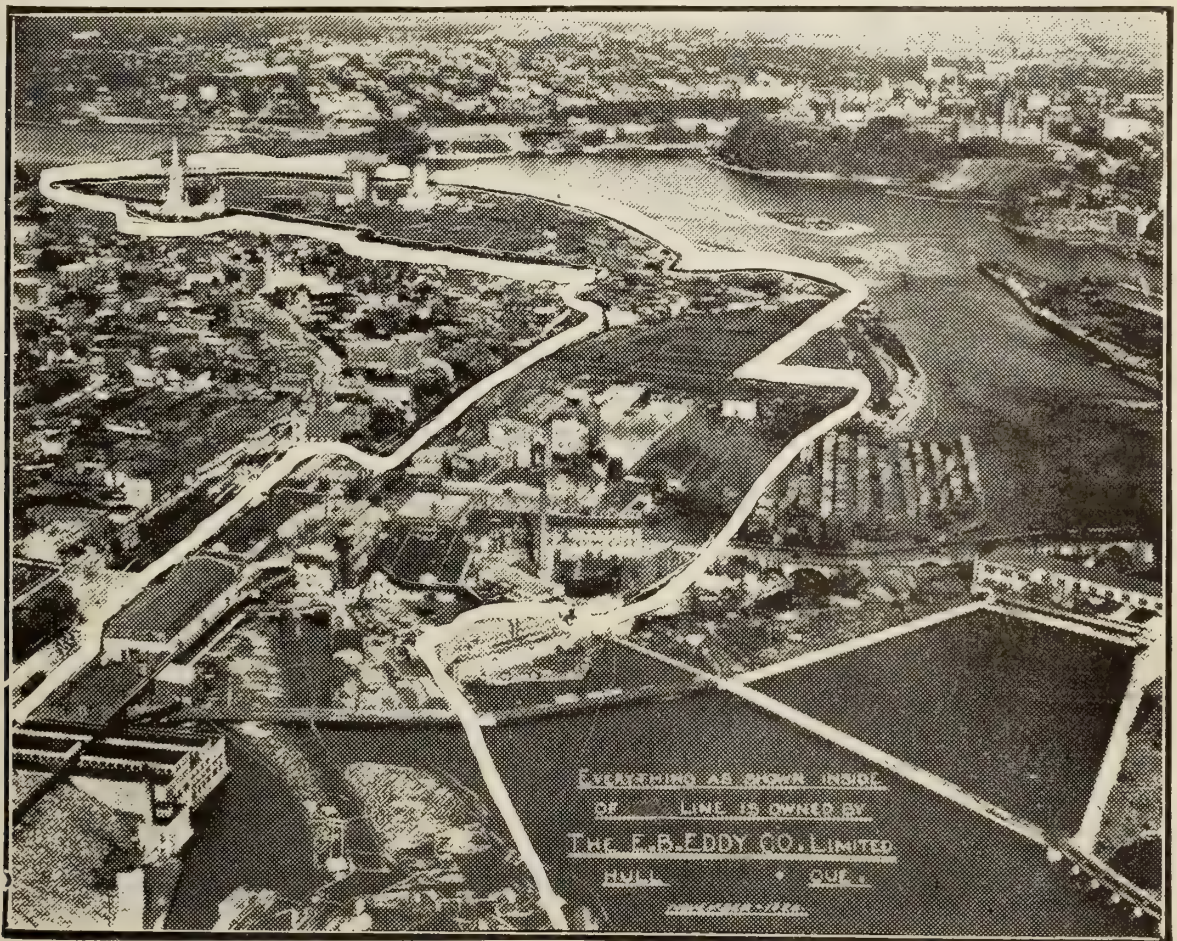
" 'Why it is absolutely the finest pulp made today,' was the reply. 'They can't make pulp like that in the United States.'

"Returning to the office, Mr. Eddy met Mr. Mayo, to whom he expressed his regrets that the pulp was not satisfactory and asked him where he could obtain two cars, as he intended to remove it back to Hull at once. Mr. Mayo, somewhat surprised, demurred, but Mr. Eddy was insistent until in order to keep the pulp 'not according to order' Mayo agreed to pay considerably more per ton than he had contracted for. Thus ended Mayo's attempt to beat down the price of his pulp!

Manufacturers Paper

"In 1890 Mr. Eddy embarked on the manufacture of paper, starting out in a small way with tissue paper, erecting a mill where 'B' mill now stands. He found a ready market for the material and next year built 'A' and 'C' pulp and paper mills. In the meantime the indurated fiberware, match and washboard business had increased by over 150 per cent., and we had to enlarge the buildings housing these plants and put in more modern machinery in order to provide for the rapid development of the business.

"I should have mentioned that Mr. Eddy had the business incorporated into a company in 1886, in order to secure the necessary capital with which to enlarge the plant, but it was a close corporation — without watered stock— which it has remained until today. The first executive of the company was composed as follows: President, E. B.



The above airplane view shows the extent of the E. B. Eddy Company's holdings in the city of Hull, embracing more than seventy-five acres, covered with the continent's most up-to-date mills for the manufacture of matches, pulp, paper and their products. The Eddy works extend from the Chaudiere eastward, taking in practically the whole river section of Hull to the Alexandra bridge.

Eddy; vice-president, S. S. Cushman; secretary-treasurer, W. H. Rowley; directors, myself and R. R. Dobell. Our capitalization was $300,000. All the stock of the Eddy Company is held by seven families, viz., the Mrs. E. B. Eddy estate, H. K. Bennett, Calgary, J. T. Sheriff, S. S. Cushman, G. Millen, W. H. Rowley estate and Gormully estate.

Fire of 1900

"We were progressing wonderfully, business was flourishing, the plant was expanding and we were debt free when in 1900 came the great Hull and Ottawa conflagration, which wiped out the entire plant with the exception of the sulphite mills. It is not necessary to recount the terrible story of that day, so disastrous to both Hull and Ottawa industrially. It will live long in my memory. It is rather peculiar that just a year before the fire Mr. Eddy, M. Rowley and myself had discussed the advisability of doing our own insuring of the property by yearly placing on one side a certain sum of money to cover losses. We agreed upon a plan and as a result had $50,000 saved up when the conflagration arrived and wiped us out. With this $50,000 all we had was another $100,000 from a lone insurance policy we carried—but we didn't owe a nickel.

He Built at Once

"Mr. Eddy was a wonderful man. He did not sit down and pine over his losses, but with characteristic energy set about planning to rebuild, and with the aid of the Bank of Montreal a revised version of the old plant, considerably modernized, was very soon under way, and today you see it as originally planned, with the exception that in 1909-1910 we erected the big pulp mill and power house on the Aylmer road. The fire cost the Eddy Company $3,000,000, but you will realize how it has progressed when I tell you that the company is free of debt.

"I forgot to mention that when Mr. Eddy started to manufacture matches he used to make them two and a half inches long, but later, believing this to be a waste of wood, cut their length to 2¼ inches, with which the buying public has found no fault. Our most popular match today is the Red Bird, which is the smallest."

Plant a Model One

Mr. Millen modestly refrains from saying anything about himself; he is just that kind of man. Endowed with natural virile force, full of splendid energy, blessed with foresight and a knowledge of the business which he has gained by practically growing up with it, Mr. Millen is just the right man in the right place. Ever mindful of the comfort of his employees, he has endeavored to make the E. B. Eddy plant a model one for the Dominion, and, the success which has attended his efforts is evident in the respect and esteem in which he is held by all who figure on the company's pay-roll.

It should not be forgotten also that Mr. Millen, who is an inventor of some repute, has devoted considerable of his talent towards perfecting some of the wonderful machinery to be found at the plant.

Had Narrow Escape

He also enjoys a distinction of another type, for he is the only person living today who ever fell into the "Devil's Hole," a mysterious whirlpool situated close to the power house, and came out alive. The water from the Ottawa river pours into the pool, but how it gets out again no one has ever been able to fathom. Mr. Millen went in when a flume burst and carried him down. Fortunately, help was at hand and he was able to keep on the surface with the aid of a big plank until rescued, but he remembers to this day the relentless suction of the underwater current, which tugged at him with fearful strength as he clung to the plank.

The Eddy Plant

The plant of the E. B. Eddy Company covers approximately seventy-five acres and is composed of two groups of buildings. One just below Chaudière Falls comprises the general offices, power station, pulp and paper mills, newsprint mill, match factory, paper bag factory, shipping warehouses and railway sidings. The other, situated about half a mile distant on the river front, within hailing distance of the Alexandra bridge, consists of the sulphite and board mills, acid plant and power sub-station.

The plant is as nearly fireproof as it can be made, being entirely equipped with a sprinkler system. There is a fire department which has not only a pumping engine, but also a thoroughly drilled staff of firefighters, whose mettle has been tested on many occasions, and hydrants all through the yards.

The pulp mill, rebuilt in 1912, is in every respect a model plant; it is built of reinforced concrete, located on the bank of the Ottawa river, immediately below the falls and power dam, and is 130 x 180 feet in size.

The paper mill consists of two large stone buildings, one devoted to the manufacture of newsprint and the other to miscellaneous paper. The latter building is 100 x 200 feet and three storeys in height. In it are five paper machines: two Fourdrinier 100-inch machines, two Harper 86-inch machines, and a 100-inch cylinder board machine. These turn out, between them, from 50 to 60 tons of paper daily. In the newsprint mill there are two Fourdrinier machines, one 100 inches and the other 117 inches in width. They turn out between 50 and 55 tons of newsprint daily.

At the match factory 35,000 feet of Canadian white pine is daily turned into matches by the latest and most up-to-date match-making machinery. The daily output of matches is estimated at 120,000,000.

The sulphite mill is equipped with four Mitscherlich digesters, with a capacity of making ten tons of pulp every twenty-four hours, together with the process machinery used in preparing the pulp. Whereas the output of sulphite pulp in 1889 was about fifty tons a week and only 75 men were employed, today fifty tons daily are manufactured, giving employment to 350 men. The board mill, situated adjacent to the sulphite plant, has a capacity of about three tons daily. The acid plant consists of four concrete towers, in which the company uses about 1,800 tons of sulphur yearly in the manufacture of bi-sulphite of lime, to be used in making sulphite pulp.

The daily production of the E. B. Eddy Company's plant is estimated as follows: 120,000,000 matches, 55 tons newsprint, 23 tons board, 5 tons tissue, 10 tons book and writing papers, 15 tons wrapping paper, 8 tons bag and manila, 1,000,000 paper bags, 600 washboards, 1,200 pieces indurated fiberware.

Over 2,500 workers are employed, and the yearly payroll of the company amounts to $2,500,000.

Transportation

The E. B. Eddy Company is equipped with a railway siding from which, via the Hull Electric Railway freight service, from ten to fourteen carloads of its products are despatched daily, year in and year out. The shipping staff is composed of forty men and eight auto trucks are used to convey the smaller shipments to the freight depots, from there to be despatched all over the world.

The company also owns two steamers, the "Mudpout" and "Alligator", which are used in connection with its depots at the lumber camps on Du Moine lake, together with a fleet of scows and birch bark canoes. From these outposts of the Eddy Company comes the lumber which is used in the manufacture of matches and other articles.

Wooden Ware

Although in the days of old the late Mr. Eddy formed the nucleus of his big industry from the manufacture of wooden articles, about the only things made of wood at the big plant now, aside from matches, are washboards, which are turned out at the rate of about 600 per day.

The manufacture of these articles is carried out by an army of nimble-fingered boys, all of them budding carpenters. Their work is not arduous nor yet does it require great skill, as the wood, all in the proper lengths, comes to them already cut and all they have to do is assemble and nail them together.

Board Mill

Substantial packing-cases made out of wood pulp, used almost exclusively by the company for the packing of its own products, are manufactured at the "board mill". The board used in the cases is made from thick gray pulp, which passes through stone grinders and to the beaters, where its substance is smoothed. Considerable otherwise waste material is used in the manufacture of this board, which in its raw state passes from the beaters to the "wet machine."

In connection with this latter machine, there is an invention by one of the Eddy Company's employees. When the pulp reaches the wet machine it is rolled into sheets and a big roller gathers sheet after sheet, binding them closer together until they are of a desired thickness. In the old days when this indicated by the ringing of a bell on the machine—which unfortunately often got out of order and was a source of trouble.

The young mechanic whose duty it was, at any hour of the day or night, to fix this bell, was often called out of bed at unearthly hours, and after deserting celibacy for the ranks of the benedicts, he became tired of the frequent disruption of his slumbers, and invented a tell-tale electric light, which, when the board is thick enough, glows and sends a warning to the tender of the wet machine. By this means he secured peace at night, for electricity has proved more reliable than the former mechanical device.

How Cases Are Made

After leaving the wet machine the boards are cut and carried to hydraulic presses, which reduce their thickness and squeeze the moisture out of them, with a pressure of 1,250 pounds to the square inch. From the presses the boards go to the kilns, where they are thoroughly dried by hot air driven against them by great fans. After being slightly dampened, they pass through calendering machines, which smooth them on both sides, and the trimmers then cut them to fit their places in the box sides, a special machine marking out the guide lines for the different box sizes. Every Eddy packing case will stand a test of 400 pounds to the square inch, often going as high as 500 pounds, and thus ensures that products leaving the plant are properly and safely packed for railroad or steamship journey.

From Wood to Paper

Today, with the world's supply of pulpwood none too plentiful, the production of pulp becomes one of Canada's most important industries. The E. B. Eddy Company is among the principal manufacturers of pulp in the Dominion, but all that is manufactured there is used in the output of its many useful products. Wood pulp is the substance of the tree, freed from its sap and resinous matter, and its value lies in the length and tenacity of its fibers. They are small enough, even when technically called "long," and one might be pardoned for thinking of pulp, in some stages of its manufacture, as "porridge," which it closely resembles. The Eddy Company performs miracles with this pulp, for it transforms it into the strong, durable paper which the company has been making for years. It is used also in the manufacture of book and writing paper, wrapping, tissue, toilet papers, paper bags, packing cases, sheathing papers for lining the walls of houses, match boxes and indurated fiberware.

Are Two Pulp Processes

There are two processes used here for making wood pulp, the mechanical and the sulphite. We will deal with the mechanical process first.

In this process the spruce and balsam logs which have been cut into two-foot lengths are brought from the water into the pulp mill by conveyers. Within the main pulp mill are two main halls. On one—called the motor room—there are five 1,200 horsepower motors. They are each connected to three 3-pocket New England grinders, formidable machines which in a minute or so convert a solid log of wood into mere gray liquid. This liquid, which is mechanical pulp in its first stage, is strained, and then pumped through pipes to other parts of the plant. The grinding is done by great stones like mill stones and the logs are pressed against them by hydraulic rams. The stones have such a strenuous life that they barely last more than a year at the most.

Sulphite Plant

The sulphite plant is situated on the bank of the river, about half a mile before the falls, and every Ottawan and resident of Hull is familiar with the great square tower which looks out over the river. Inside this tower is placed, in an upright position, the Eddy Company's giant sulphite rigester, made of steel plate an inch thick, 47 feet high and fifteen feet in diameter. The same process of "cooking" goes on in this digester as in the smaller ones, but the great digester is "blown off" instead of shoveled as in the others. The tower is 112 feet high and its walls at the base are four feet thick.

The bisulphite of lime used in making sulphite pulp is made from finest Canadian limestone and pure spring water combined with Louisiana sulphur, and it takes from 250 to 300 pounds of sulphur to make a ton of air-dry pulp.

Sulphite Process

The first battery of four Mitscherlich "digesters" at the Eddy plant consists of four boilers forty feet by thirteen feet six inches in diameter, made of steel three-quarters of an inch thick, and inside the steel lining is an acid-proof lining of brick and cement nine inches thick.

Pulp Becomes Paper

Writing paper, wrapping paper, manuscript, book paper, newsprint, etc., are made from Eddy's pulp, but to the pulp when prepared is added other substances, such as talc or china clay, to make the paper smooth and opaque for printing, aniline dyes to keep its color right, and a little liquid rosin to "size" the paper and prevent inks from blurring when laid upon its surface by either pen or printing press.

Even if the machines were not used for the manufacture of newsprint the Eddy plant would not be idle for it uses every day at least seven tons of various kinds of paper for its own purposes.

Indurated Fiber

Indurated ware, a special product of the E. B. Eddy Company, although it is as strong as metal, is light, smooth and waterproof. It is made of pure wood pulp, which goes through processes very different from that of the paper making. Mechanical and sulphite pulp from the pulp mills is pumped to the indurated ware department, where it is poured into a beater not unlike that at the paper mill. From the beater the pulp is pumped to a battery of powerful hydraulic presses, specially developed for the manufacture of the particular article. Pails, tubs, buckets, etc., are formed over a core of perforated brass, which is further covered with cheese-cloth before the pulp flows into place around it. The outside mould of the machine is also of brass and a pressure of from 200 to 2,000 pounds per square inch can be applied. Under this tremendous pressure the pail or tub takes shape, after which it is released from the press and goes through a heating process, where it gets the impress of the firm name, as well as further pressure to improve its qualities. It is dipped in a special varnish composition, buffed, and baked in a kiln to dry it. Handles are fitted after the baking is done.

Among the articles manufactured in this branch are pails, butter tubs, barrel covers, flower pots, pigeon nests, cuspidors, wash tubs and many other things of a like nature.

Tissue Paper

Purity is the first essential in the production of tissue papers made at the Eddy plant, which embrace serviettes, toilet paper and paper towels. Serviets and towels are folded at lightning like speed by the machines, but even then the demand for them is very much in excess of the production.

Ingenious machines interfold the famous "Onliwon" tissue paper towels which are to be found on trains, in hotels and offices all over Canada. The interlocking fold which ensures the pulling out of a new towel for each user is rapidly made by a descending blade working with unerring precision on a steadily running machine. The serviettes are packed flat in bundles of 250, and the towels go in fifties. In making the rools of toilet paper the company uses a machine called the "non-stop rewinder," into which the wide uncut paper is fed, and rapidly revolving spindles rewind the paper into rolls of the right size. During the process the perforation is done at exactly the right intervals, and without a pause the completed roll is cut off and dropped while the machine continues on the next. There are a great number of these machines, which are tended by young girls. These rolls are turned out at the rate of 1,200 an hour.

Paper Bags

Twenty-three marvellously speedy machines turn out no fewer than a million paper bags a day in the factory, of every known variety. During the great war the Eddy Company's paper bags were used for the containing of explosives; there is a mighty army of paper bags going out almost daily to the retail grocers of Canada, and to the millinery trade. The bags vary in size up to 25 x 29 inches, and the factory in which they are made is one of the biggest in the mammoth industry at the Chaudière. All the paper used in their manufacture is made at Eddy's in the various necessary sizes, and the bags are made by a bevy of girls, alert, merry and healthy owing to the surroundings in which they perform their duty.

When fed in to the bag-making machines the paper for the bags is gummed on one side with a pure starch paste and then quickly caught by steel clutches and folded into square shapes. The sides of the bag are neatly tucked in, this effect being produced by air suction. Meanwhile the bottom of the bag is being adroitly folded in by steel fingers and securely fastened by paste. Pressure of a rhythmical machines unit flattens the bag out and it is cut off from the tube with a serrated edge and passed off to join the pile of those made ahead of it. The whole process takes only a fraction of a second, but it is accurately done and the bags are counted as they are made, a machine ringing a bell at every 25.

The bags to hold explosives are especially interesting. They are made of highly sized paper which is cromped, having the effect of making the bag slip easily into the powder box, but when the powder is put in, the cromping expands and every crevice is filled firmly, so that the bag fits the box like a silk lining. Sugar is the standard used to measure the weight content of a paper bag, and the number stamped upon it tells how many pounds or fractional parts thereof a bag will hold. Huge bags are also used by automobile manufacturers, and these are made by the Eddy Company in considerable quantities, being made sufficiently large to entirely cover any onto. They are used principally when cars are stored for the winter and for protection in being transported by rail, as the paper keeps out dust and acts as a blanket against changes of temperature.

Power Plant

When Ezra Butler Eddy came from Vermont and started business in Hull in 1851, the Chaudière falls were fuming and thundering over their rocks unharnessed, as they had been from the beginning. Mr. Eddy began to harness them as his operations extended, and gradually the immense power which had been running to waste was converted to industrial use. Today the immense Eddy plant is controlled physically by 18,000 horsepower, provided by great electric generators, which run the whole giant array of the company's manufacturing machines. The plant has been declared by experts to be the most complete of its kind on the American continent. Its foundations are laid on steel piles based on the solid rock, and 35,000 bags of cement were used in the concrete work of the power house, which is absolutely fireproof, and which from its switchboard controls the grinding machines in the pulp mills, the paper-making machinery, match-making, indurated fiberware, sulphite plant, saw-mills, lighting plant, and its fire-fighting department.

Match Factory

There is a breath of the glorious outdoors about a box of Eddy matches, for every match manufactured in their factories is made out of specially pickked, flawless white pine, logged to the mills from the Eddy lumber camps, and which is subjected to rigid inspection before it is fed to the modern match-making machines.

The pine is sawn to a thickness that is exactly match length and is then dried and seasoned by the kiln-drying process; and must, to pass inspection, be all straight-to-the-grain pine. These specially selected blocks of matchwood are fed to a machine which holds them as in a vise, and passes them through a many-edged cutter, which converts them into headless matches. Held on a metal travelling belt, they pass through a chemical bath, which gives them self-extinguishing properties. They are next plunged into another bath, which ensures their lighting when struck, and the last phase is where the "head-end" is machine-dipped into "Sesqui," a non-poisonous substance, which forms the head. The perfected matches are then subjected to a drying process. The machines are said to be the fastest match-making machinery on the American continent.

As the matches come from the machines they pass along narrow chutes, on each side of which sit a perfect army of girls of all sizes and ages. The Eddy Company takes especial care of the height and right position of the girls' seats, for such details make quite a difference in the comfort in which they work. As the matches come rushing along the chutes the girls grab them in handfuls and box them, placing on top a protective strip to prevent them tumbling out again. The covers are put on and the boxes pass on to the packing room to be cased, or to the stock room to await orders. There are twelve of these modern machines in the factory, which employ from eight to fifteen girls.

Air-Washing Process

Matches cannot be made in every kind of air, so the company has installed an air-washing process which provides a sweet, wholesome supply of air for the employees in the summer and keeps the temperature 60 deg. F. in winter months. This process consists of a fifty-ton ice plant in the basement, with one hundred sprays and air pumps.

Back in 1854 when Mr. Eddy began manufacturing matches the making of boxes in which to hold them was a tedious business. French-Canadian women used to take the wood home and arrive in the morning in a long procession with bed ticks crammed with them. They then used to be made of a thin veneer of wood, finished with paste and paper. Times have changed. Today a great array of up-to-date machines take care of the manufacture of the boxes and do it with almost human ingenuity, and each machine can handle over four hundred boxes a minute. Rolls of tough resilient paper are placed on the machines, which fold them into square tube shapes for the covers of the boxes, which are then printed on both sides, cut to the right length and fastened ready for service. They are from there delivered in hoppers to the girls who box the matches. Another type of machine makes the containers from similar paper and by a similar process, only there is no printing.

Veneer Process

The foregoing article treats with what is known as the continuous process matches, but there is another kind manufactured by the veneer process. The match splints made by this process come from the original log in the form of a ribbon of wood unwound from the log by a machine which revolves it to a saw. The wood is peeled from the log like the skin from an apple, and is then taken by boys, who send it through other machines, which chop the wood into match splints. They are then put through the usual drying and dipping processes, and are joined with the other matches, making a total of 120,000,000 matches which the factory puts out each day.

ONTARIO BUSH FIRES

Sudbury, Ont., Oct. 2.—Bush fires are raging within three miles of this town. The fire started last Wednesday in the vicinity of Ramsay Lake and is burning considerable slash but very little timber. Fire rangers have been fighting the flames in the Burwash district the entire week. They were started by settlers to clear the land but got beyond their control.

FOREST FIRES IN QUEBEC

Labelle, Que., Oct. 2.—Forest fires north of Labelle are burning fiercely. The town of Labelle suffered from smoke all day yesteray and last night the flames could be seen on the mountain nearby. Yesterday afternoon men were sent out to fight the fires.

A GRAVE WARNING FROM THE U. S.

To the Editor of the Gazette:

Sir: The article reprinted in your issue of the 21st from the *Commerce Reports* issued by the United States Department of Commerce describing the increasing dependence of the Eastern States upon Canada and other countries for their requirements of woodpulp and newsprint while gratifying to Canada's industrial status also contains a grave warning.

"If the paper industry is to be kept alive in the United States, the main problem is, without question, the supply of pulpwood," says this report, which goes on to describe how New England, accountable for 30 per cent. of the American newsprint production, New York 50 per cent. and the Lake States 15 per cent. are fast becoming denuded of pulpwood, while transportation costs operate to exclude pulpwood from Alaska and the Western States from possible use in the East.

"These facts show the urgent necessity of a survey of American resources in pulpwood and a definite program for reforestation in the eastern and lake states, but reforestation cannot overcome the immediate difficulties, as it would take many years to put the United States on a self-supplying basis," is the conclusion reached.

While this situation has is advantages for Canada and especially for the provinces of Quebec, Ontario New Brunswick and Nova Scotia, it also has its lessons. Canada is now using up pulpwood at the rate of approximately 3,000,000 cords a year. It is exporting to the United States, quite unnecessarily, an additional 1,000,000 cords. Our consumption of wood is increasing at the rate of between 150,000 and 175,000 cords a year. A 4,000,000-cord cut of wood represents the average harvest from 800,000 acres or 1,250 square miles, assuming that the total yield is taken. The preventable waste of wood by fires and its destruction by epidemics of disease and insect pests is also operating to reduce the available supply. The consumption of pulpwood cannot but be progressively greater as time goes on although it might be checked, in part, if a way were found to deflect the wood now being exported into home manufacture.

The point is, however, that notwithstanding this annual drain upon our pulpwood resources, little or nothing is being done for their replenishment. It may be, as some contend, that we can go on using up the yield from twelve hundred square miles of forest every year without risk of ultimately exhausting our supplies, but the experience of all other countries is against such a contention which, furthermore, is opposed to both nature and physical law. It is more reasonable to believe that we are at present heading for precisely the position that New York, New England and the Lakes States now find themselves in as a consequence of acting on the same blind reliance upon the future to provide.

If the provincial authorities—and they are the only ones competent to act—want to preserve and develop the pulp and paper industry, which is becoming to mean so much to the prosperity of this country, they should take steps immediately to ensure a perpetual supply of pulpwood. If they don't there is no reason for doubting that within a comparatively few years Quebec, Ontario and the other pulp-producing provinces will find themselves in the exact situation that now prevails in the Eastern States.

— *Edward Beck*

Montreal, Sept. 21.

It is not revolution that destroys machinery, but the friction.

—*Henry Ward Beecher*

THE NEWS PRINT INDUSTRY

The future of the news print industry in the United States depends in good measure on replenishing depleted pulp wood areas near the mills, according to the National Bank of Commerce in New York. Production of news print has been at a standill for some years and the economic effect of having to ship raw material over big distances is beginning to be felt.

"In the east where the principal mills are located, it has been estimated that present supplies of pulp wood will be exhausted within twenty or thirty years," the bank says in the September number of its magazine, *Commerce Monthly*, "although by the extensive practice of reforestation the cut-over areas near the mills could within 30 or 40 years be made to yield more than the present consumption requirements of the United States.

"Already the pulp and paper mills of some states are importing more than half of their supply of raw material. While considerable quantities of pulp wood are imported into the United States from adjacent freehold lands of Canada, the news print manufacturing industry in the United States is beginning to feel the economic effect of having to ship raw material over long distances.

More than eleven and a quarter billion copies of daily newspapers are now printed annually in the United States. The gravity of the position of the news print industry in the United States in relation to pulp wood supplies is emphasized by the fact that the production of news print in the United States for some years has been practically at a standstill while production in Canada has trebled. Only two news print plants have been established in the United States since 1909.

"There are supplies of pulp wood in the United States and its possessions adequate to satisfy the requirements of the news print industry for years to come. These supplies, however, are in the western states and in Alaska while 90 per cent. of the news print mills of the United States are in the eastern states which are also the main consuming centers. It is impracticable to ship pulp wood a long distance since transportation costs rapidly diminish the margin of profits.

"Apparently the most feasible plan for protecting the source of raw material for the news print industry established in the eastern and lake states is to adopt a policy similar to that of many European countries in reforesting cut-over and waste areas and conserving present supply. More than 60,000,000 acres of potential forest lands accessible to the present established pulp and paper mills in the United States are now producing nothing. A production of one-third of a cord of pulp wood annually per acre on the waste areas would yield 20,000,000 cords or three times the present consumption requirements in the United States.

"The annual cut in the United States is more than three times the annual growth since conservation and scientific forestry are practiced only in a limted way. The United States is the largest consumer of news print in the world and since 1910 it has been a net importer of news print. News print consumption in 1913 was somewhat less than 1,500,000 tons, and in 1921 it approximated 2,000,000 tons. In 1922, production of news print in the United States will be about 1,400,000 tons.

"Canada is by far the principle source of supply of news print not manufactured in the United States. American capital has gone extensively into the development of news print plants near the sources of supplies of pulp wood in Canada. The rapid expansion of the industry in Canada has facilitated the installation there of improved hydroelectric machinery capable of turning out 1,000 feet of news print per minute. Such improved equipment renders obsolete many of the older and less efficient plants in the United States, which can be operated profitably only when there is a strong demand for news print. Prior to the war imports of news print from Canada averaged about 133,000 tons. By 1920 they had increased to 679,000 tons and in 1921 totaled 657,000 tons.

"The development of the wood pulp and news print industry in North America, which now produces more news print than all the rest of the world, has been on an immense scale and perhaps with more regard for immediate demands than for healthy future growth. In consequence of the partial exhaustion of raw material, the industry in the United States has, for some years, been practically stationary, while in Canada abundant timber resources have facilitated rapid development. In both countries, the industry in the past has developed on the exploitation of virgin resources. For the establishment on a more permanent basis in the future, a policy of conservation would seem to be necessary."

GERMAN PAPER PRICES 50 PER CENT HIGHER

German paper prices rose 15 per cent. in July over June, and an average of 50 per cent. more on August 1. Printing paper advanced 45 per cent. to 60 per cent. Further substantial increases are probable. Aside from advances, reflecting the inflation in coal, freight, etc., wood pulp is scarce. It has risen faster than the mark has depreciated, though the lumber trade is but sligtly affected by increased production costs applying to other lines. The State forest administrations have advised that they will follow the price policy of private industry, and as this amounts to nullification of all antiprofiteering laws, there is no limit to what may be demanded for pulp wood.

The demand for paper in Berlin is active. Advances, however, are restricting new business. Some factories promise delivery only after five or six months. Little foreign business is on hand, as before the recent drop in the mark home prices were close to international values.

THE DIMINISHING OIL SUPPLY

The pastor of a colored church announced that his sermon would be "Am They a Hell or Am They Not?" An' I Will Prove That They Am." He then spoke as follows:

"Brethern, the Lord made the world round like a ball. And the Lord made the world so it could go round and round. And the Lord made two axles for the world to go round on, and he put one axle at the north pole and one axle at the south pole. And the Lord put a lot of oil and axle grease in the center of the world so as to keep the axles well greased and oiled. And then a lot of sinners dig wells in Pennsylvania and steal the Lord's oil and grease. And they dig wells in Kentucky, Louisiana, Oklahoma and Texas and in Mexico and Russia and steal the Lord's grease and oil. And some day they'll dig so many wells that they will have all the Lord's oil and grease and them to axles is going to get red hot. And then, that will be hell, brethern, that will be hell." — *Exchange.*

Making Cleaner Paper

By EARL DEWEY

The manufacturers spend thousands of dollars a year in trying to produce a clean sheet of paper. We know that paper which is not sold for "firsts" has to be sold for "seconds" or "thirds" or has to be milled over again, meaning the loss of labor, and many other things. In order to illustrate what I intend to show, I will ask the reader to walk with me through the mill to get acquainted and try and locate some of the paper makers difficulties.

We will start from the bale of rags. A bale of rags has to be loosened, so they are run through a machine which is called a spreader. They are then taken to remove all buttons, hooks, eyes, etc., and the seams that are in the rags must be opened to loosen the dirt that might be in them. When this is done they are sorted and put in piles according to their value. They are next run through a set of knives which cuts them into small pieces, from which they are put through a large screen that is called a duster to remove whatever dirt is left in them, then cooked to remove all oil and grease.

The rags are then washed and bleached, and dropped into large vats or what paper makers call drainers, to drain out the liquors and gases that are used in cooking and bleaching. They are then ready for the beating engines, where there is a large roll of bars that cuts these rags into small, fuzzy fibres. After a length of time, we let these fibres down into a chest, from where, if we do not have a jordan, they are pumped up to a box called a stuff-box where they are mixed with water and then run along into a box called a sand-catcher and into a screen that lets it flow onto a wire cloth where it is formed into a thin layer. It is squeezed and run on felts to get whatever water which could not be gotten from it when on the wire and then run over large cylinders filled with steam to further dry it.

We now have a sheet of paper. In going along no mention was made of the use of wood nor of the various chemicals used to give durability, color, sizing, etc., as there are so many ways these are used and I would be drifting from my subject.

Now that we have a sheet of paper, let us try to find where the dirt is coming from. Starting at the washing engine, we know there is a large roll that draws the rags out into long fibres. This roll has a good many steel-bars and is continuously revolving in water. In this washing engine there is a device called a button catcher, that catches hooks, pins, buttons, etc., that might have gotten in by the sorting. If this button catcher is not clean, the buttons, etc. will break away with the result that they will get into the stock, go through the mill and make a lot of waste. When the stock is washed and bleached, we are ready to let it down into the drainers. Did you notice the floor of your drainer and the side walls? Was it fit to let down the clean white stock?

If we are ready to furnish our beating engine, we must get the stock up. If you are digging stock, are you walking on it with dirty shoes? Did you notice the conditions of your stock car; is it fit to put nice, white stock into? If you do not notice these how can you expect to make clean paper? And they say it's in the stock.

We are now ready to furnish the beater engine, where there is a large roll with bars that is continuously revolving in water. Water eats away iron. How often do you scrape these bars on this roll? The water is eating the bars on this roll, and the result is that rust and metal is breaking away and showing up in your paper.

Twenty percent of your dirt is coal-dust. Where is it coming from; is it from the chimney in your boiler house? It can't get into your stock if you keep the windows down.

We can not make paper without water; can we? We know that water runs a long way and that after a while will rot a stone away. Then if little specks break away from the stone and it gets through the filters, what would stop it from getting into your stock? The water that is used on your beaters, washers and machine is usually filtered, and in a good many mills that I have worked in, the water-pipes overflow. Water-bags should be placed to catch the rust and dirt that comes through. Supposing that these bags fill up and they break open; what becomes of the sediment that was in the bag? Many a man watches his work, but this happens to the best of them; I know from experience. A good idea is to attach a sand-box to each pipe; they pay for themselves in a short while.

We will now get our stuff into the chest. How are the joints of the chest; are they rough? Has slime started to accumulate? How are the seats of your stuff pumps; are they slimy? How are the pipes that the stuff runs through? Right here may be the cause of some of your weight trouble. If the ball does not fit the seat in your stock pump and the seat is slimy, variations can be expected in weights, because your pump is not giving results and will cause lumps and strings to gather. This is only a suggestion from experience; there are many ways to cause variations in weight. To get back to bit, how long are the pipes from your chest to your machine? I believe that all pipes should be as short as possible and put up so that they can be taken down at short notice.

We will go to the stuff-gate now and let the stuff run through the sand-catcher. Some men believe in a short sand-catcher. If you run the stuff through a long sand-catcher it will make it slow. If the bottom of your sand-catcher has a nice, long nappy felt on the floor, and you have it arranged so your stuff has an up and down flow, it gives the dirt a chance to strike this nappy felt and cling to it.

Rust and metal are other things to be considered. A good many paper machines today have metal-catchers. I believe a good place to have this is just before it strikes the screen, because you are running the stuff through a long sand trap, and you have it arranged to give that up and down flow. The long nappy felt is getting the most of it, so that the metal catcher will not have to do much work — and I think you can get better results.

We are now ready to run our stuff over the wire. Beneath the wire is a box called a save-all which catches everything that comes from the wire. If the save-alls are made so the men can not wash them out, the slime that accumulates breaks away with different speeds of the machine.

How about the wet-broke at your press rolls? Are you throwing broke into a car that you used around your washing engines? Are there fifty kinds of colors in it? All these little things go to show how easy it is to make dirt. If men would spend a little more time and watch these little things in different departments, it would mean a great deal to the manufacturers, and to the men themselves.

With all my experience, I have never run across a man that did not want to give results in a paper mill. I think if men were given time and force of water, etc., the manufacturers would save in their finishing room thousands of dollars a year. The employees can not do everything; it is up to the management of a mill to have a system.—The Paper Industry.

The profit is in the repeat business.

TORONTO TRADE NOTES

From all parts of the Province of Ontario especially the central areas come reports of improving conditions. There are both real and psychological reasons for this. Real conditions are those incidental to harvest returns and the moving of harvested products.

There was said to be much waste and small financial return to growers in the fruit areas, but well informed persons are of the opinion that such reports are not warranted and that crops are being fairly well handled.

Retail and wholesale trades are beginning to report improved collections and steadier business, though there does not appear to be any marked increase in volume.

A sense of relief in the matters incidental to the fuel and railroad strikes, supplements the satisfaction of good harvests and continued fair weather.

Printing trades reflect the generally improved conditions and are doing a good volume of business in general lines.

Market Notes

Advances affecting sulphite and sulphate pulp, all grades of book paper and cheaper writings are now in effect. There is a general trend to a rising market in all papers and paper stocks.

Groundwood—Prices keep within the same extremes, with tendency in some cases to higher levels; consignee mills are paying $30.00 to $40.00.

Sulphite—Prices for all grades of sulphite tend upwards. In book and bleached grades a definite advance of $10.00 per ton is in effect. Book grades of natural are now $65.00 to $70.00 f.o.b. shipper. Bleacher sulphite runs from $90.00 for book grade to $100.00 for bond quality f.o.b. shipper.

Sulphate—Has advanced $5.00 a ton to $75.00.

Book and Writing papers except bonds and high grade writings have been advanced ½c a pound.

WILL HAVE $500,000,000 IN IT

Commenting with satisfaction on the announcements that the Bathurst Co. is to build a newsprint mill, the Parrsboro "Record" says:

The growth of the pulp and paper industry in Canada has been one of the marvels of the last ten years. The manufacture of war munitions gave this country much advertising; but from the standpoint of permanent benefit, it was hardly comparable to what the pulp and paper industry has done, is doing and will do. When the demand for munitions fell off, the demand for pulp and paper held up our exports. During the last five months it has enabled us practically to make up for what we lost in exports through the "emergency" tariff.

If there is one branch of Canadian industry the future of which seems assured, it is that of pulp and paper. The United States, the richest and most rapidly growing country in the world, is eating up its own pulp wood resources so fast that it must have recourse to Canadian supplies. Already $350,000,000 is invested in this industry, and within a few years the amount will be $500,000,000.

WHO WANTS A PAPER MACHINE?

A letter from a contemporary in France asks if we know anyone who wants to buy a Fourdrinier machine for boards and heavy papers. We have a blueprint showing a side view and are advised that the machine has been run only 2 years. It was built by Banning Seybold.

BIG TIMBER DEAL

Port Arthur, Ont. Sept. 26.—Geo. Rupley, vice-president and general manager of the Minnesota Forest Products Company of Duluth, in Port Arthur yesterday announced the purchase by his company of his 66.500 acres of timber and surface rights on Isle Royale from the Island Copper company, and says that development work will be commenced in the near future. the Island Copper Company to work the copper properties and the Minnesota company to take the timber. There is a large quantity of pulp, cedar, birch and maple, the latter being of excellent quality and may be used for veneer. The timber will be taken out from the island by barges. Isle Royale is 45 miles from Port Arthur and is in the state of Michigan.

KAMINISTIQUIA PAYS

Contractor and Trust Company Awarded Claims

Toronto Sept. 29.—Justice Latchford has directed payment out of court to a contractor named Howe, who built mills at Port Arthur for the Kaministiquia Pulp and Paper Company, of the sum of $60,000; $35,000 is directed to remain in court to answer a claim of $29,000, by the City of Port Arthur for power supplied the balance of $105,000 to be paid to the Capital Trust Company, representing the bond holders. Money in court totalling $200,000 is derived from the sale of the company's plant.

LIQUID CHLORINE TO BE MADE IN CANADA

The Canadian Salt Company, Windsor, Ontario, has announced through its Manager, Mr. George M. Duck, that its new plant for making liquid chlorine will be in operation early in October. This is the first plant of its kind to be erected in Canada. It will have a capacity of ten tons per day.

The product is to be 100 p. c. liquid chlorine and will be shipped in 150 lb. cylinders and in tank cars.

This company is expanding in other directions, notably increasing its evaporator capacity by addition of more units and installing fuel economizers in its boiler room.

TREND OF PRINTING SALES AND PAPER PURCHASES IN THE U. S.

In his monthly letter, Mr. Jos. A. Borden of the American Writing Paper Co. says: The trend of Printing Sales and Paper Purchases for the month of July show that sales and purchases were about the same as of one year ago. Undoubtedly the unsettled business conditions due to the coal and railroad strikes were responsible for the decline. For the same reason the paper purchases and tonnage values show an increase.

Reports from several printing centers indicate greater activity in printing circles than has been experienced in many months. With labor troubles practically disposed of it is reasonable to expect a speedy return to normal business conditions.

TILED TANK FOR PORT ARTHUR

D. Pilla, Port Arthur Mosaic contractor, has received a contract from the Port Arthur Division of the Provincial Paper Mills Ltd., for the placing of 10,000 sq. feet of white enameled tiling as a lining to several tanks in the new paper mill. The contract will be completed in about a month. One carload of tiling will be used.

JAPANESE PAPER MARKET STILL INFLATED

Articles appear from time to time relating to the news print paper condition at present in Japan which are misleading unless one has a thorough knowledge of the industrial and commercial situation there, says the "Fourth Estate."

It must be borne in mind that the wealth of Japan is practically in the hands of less than five per cent of her people, and that this small group profited enormously through their operations during the world war.

Prices in Japan were inflated to a point where the ordinary coolie could not live or even exist except through a very great increase in the wage scale, and that increase has amounted to practically three hundred per cent. And even at this increase there is much unrest in the country because of the extremely inflated prices of commodities and the continued difficulty of existing, even on the present wage scale.

It is well-known among the financiers of the country that Japan has today the second largest gold reserve of any country in the world, and that from this point of view her condition is sound.

People who control the affairs of Japan, both politically and industrially, have so far been unwilling to bring the prices down to a more nearly normal level, as have all the other countries of the world; being unwillingly to write off the loss which this difference between the cost and present value represents.

The effect on her paper making industry is the maintenance of price levels which are losing for her the adjacent markets of Asia and the East Indies, which she for years has enjoyed. In fact, one or two of her large publishers who are independent of the control group are finding themselves able to import paper at a lower cost to them than the price asked by the manufacturers in Japan.

All this points to the necessity for an early readjustment of values, otherwise conditions will become more serious in Japan than they yet have been, and this fact applies not alone to the paper industry but to practically the entire industrial life of Japan, for today she is unable to complete in the export market with the United States, Canada and Scandinavia, not only in paper but in many other things.

Standard news print can be landed from almost any of the countries named in the warehouse of the consumer in Japan for 8 cents per pound, as against the present price asked by Japanese manufacturers of 9 cents per pound.

We may not expect much of anything in the way of importations into Japan, except as this pressure is necessary to bring about the economic readjustment in that country, which other countries have already gone through.

INVENTORY OF FORESTS

Quebec, Sept. 28.—Out of the 45,000,000 acres of leased timber limits in this province, 1,200,000 acres were inventoried in the course of the season by forestry engineers, and reports were submitted. This inventory is proving advantageous. In due course provision will be made to make a complete inventory of the timber limits, which will contain the value and description of the timber on licensed limits. The inventory is first made by the holders' employees, and then controlled by the engineers of the Department of Lands and Forests.

ESTABLISH NEW TOWN FOR WIGWAM P. & P. CO.

The Cranbrook, B. C., "Herald" gives the following account of what is going on in connection with the establishment of the big pulp and paper mill of the Wigwam Pulp & Paper Co., near Elko, B. C.

McNab, B. C., will soon be the newest town in the province. It is to be situated at the site of the big paper and pulp mill to be erected there by the Wigwam Pulp and Paper Co. The site of the new townsite is about six miles directly south of Elko, and it will be served by a spur of the Great Northern from that town, and later on, it is expected, the C. P. R. will also run into the new town. About fifteen hundred lots are being surveyed at the present time, and a price of $125 each has been set on them, the first locations to be established by lottery to take place commencing on December 15th. By this means everyone will have a chance on the best locations, and it will not be possible for anyone to tie up the best business or residential sites by buying blocks of adjoining lots. It is stated that the company has enough pulp supply in sight to ensure the operation of the big plant for about seventy-five or eighty years, so that that the new town is not likely to prove one of the mushroom properties of the early boom days.

The lots measure 140 feet deep by 30 feet wide, and it is planned to specify that the buildings to be erected thereon shall conform to certain set standards and general plan so that there will be no buildings that later become an eyesore in the town. The soil is such that on the large size lots there will be ample opportunity for profitable gardening.

The plan of the townsite includes an area laid off for a golf course and sports ground, in addition to a park site.

That things are going to be brisk around Elko shortly is seen from the fact that work will be in progress concurrently on the power development project near Elko on the river, and the big pulp mill as well.

SAFETY NOTES

A. P. Costigane, Secretary-Engineer of the Ontario Pulp and Paper Makers' Safety Association has just returned from a trip covering mills in the Northern and Western areas of the Province. He reports that all the mills are making sincere endeavors to reduce the accident records and most of them are in very good condition from the safety viewpoint.

The Spanish River Company's mills are entering an intensive accident prevention campaign for the month of October, having perfected a special organization for the purpose, which is sure to be reflected in the accident record of the current year.

The mills at Fort Frances are alive to the vital needs of accident prevention and have made plans for a further thoroughly organized campaign. The executive officers, superintendent, and foremen are all taking a keen interest, and it is their ambition that before the end of 1922 their mill will be well in the lead for possession of the flag and custody of the shield offered for competition by the Ontario Pulp and Paper Makers' Safety Association for the class in which their mill qualifies.

Howard Smith Paper Mills announce that regular quarterly 1 1-2 % dividend on common and 2 % on preferred stock, are payable October 20, to record October 10.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Product

A-1. Araucaria as Raw Material for Paper Pulp. CECIL LAURELL. **Svensk Pappers-Tid.**, xxiv, 357-358, (1921); **Chems. Abs.**, xvi, 830, (March 10, 1922). The author made kraft pulp in Australia from **Araucaria Bidwilli** and **A. Cunninghami.** The fibers are long but need hard cooking and much chemicals. Young trees of **A. Brasiliensis** are better than old trees. They make a strong sulphite. The older trees make much darker pulp. — A.P.-C.

A-1, A-4. Determination of the Degree of Lignification (Lignin) in Pulp and Wood. RUDOLF SIEBER. **Zellstoff u. Papier**, i, 223-6, (1921). Translation by C. J. West in **Paper Trade J.**, lxxiv, No. 3, 54 56, (Jan. 19, 1922). Because of the expense of the determination of the methyl number, the author investigated lignin determinations with a view to substituting this for the methyl number. Study of Becker's, Willstatter's and Fellenberg's methods indicated that the last may be considered as a substitute for the methyl number determination for the present. Certain suggestions are made about carrying out the test. — A.P.-C.

A-1, E-2. Formation of Oxalic Acid from Sulphite Waste Liquor and from Lignin. EMIL HEUSER, H. ROESCH, and L. GUNKEL. **Cellulosechem.**, ii, 13-19, (1921); **Chem. Abs.**, xv, 2983, (Sept. 10, 1921). Lignin free from carbo-hydrates produced no oxalic acid on fusion with potassium hydroxide up to 270°C; sulphite waste liquor under similar conditions often yields oxalic acid, owing to the presence of cellulose and other carbohydrates. Oxidation of lignin with fuming nitric acid gave yields of oxalic acid up to 25% (20 p. c. actually isolated): addition of small amounts of ferrous sulphate or of mercurous sulphate or ammonium vandate reduced the yield and the use of a mixture of nitric and sulphuric acids produced no oxalic acid, doubtless owing to the action of sulphuric acid. On heating 3 g. of lignin with 60 cc. of 25% nitric acid for four hours at 80 to 90°, a clear solution was obtained from which 0.13 g. of oxalic acid was isolated; the yield was increased to over 17% by the addition of 0.01 g. of ferrous or mercurous sulphate but larger amounts of these catalysts acted less favorably.-A.P.-C.

A-1. The Formation of Oxalic Acid from Lignin. E. HEUSER and A. WINSVOLD. **Cellulosechem.** ii, 113, (1921); **J. Soc. Chem. Ind.**, xl, 869A, (Dec. 15, 1921). When 4 g. of lignin are heated with 50 g. of potassium hydroxide for 40 minutes at 280°C a 20% yield of oxalic acid is obtained. — A.P.-C.

A-1. Methylation of Lignin. E. HEUSER, R. SCHMITT, and L. GUNKEL. **Cellulosechem.**, ii, 81-86, (1921); **Chem. Abs.**, xvi, 490, (Feb. 10, 1922). Lignin, containing 14.65% methoxy, treated with methyl sulphate gave a methyl-lignin with 26.29% of methoxy. — A.P.-C.

A-1. Constitution of the Lignin of Fire Wood. P. KLASON. **Svensk Kem. Tidskr.**, xxxiv, 4-17, (1922); **J. Soc. Chem Ind.**, xli, 627A, (Aug. 31, 1922). The calcium salt of alpha-ligninsulphonic acid was prepared by treating sulphite waste liquor with calcium chloride. Waste liquor was also precipitated in three separate fractions with sodium chloride and the betanaphthyamine salts prepared from the three fractions and from the residual liquor were substantially identical, corresponding with the formula $C_{20}H_{20}O_6 + H_2SO_3 + C_{10}H_7NH_2$. Several derivatives of alphaligninsulphonic acid were prepared and studied, from which it is concluded that alpha-lignin is a definite uniform substance containing a conifery aldehyde nucleus, a flavone or coumarone ring, and an acrolein complex. — A.P.-C.

A-1, E-2. Ligninsulphonic Acid and Lignin. (Preparation of Electrodes for Accumulators from Sulphite Waste Liquor.) F. KONIG. **Cellulosechem.**, ii, 93-101 105-113, 117-122, (1921); **J. Soc. Chem. Ind.**, xli, 9A, (Jan. 16, 1922). Neutralized concentrated sulphite waste liquor was sprayed into 50% sulphuric acid through a fine jet, the quantities being chosen so that the final acid had a concentration of 360 g. per 1. The precipitated ligninsulphonic acid was redissolved and and reprecipitated in the same way, then neutralized with barium carbonate and the solution of barium salt poured into ten times its volume of alcohol. The barium ligninsulphonate had a composition corresponding with the formula $C_{46}H_{40}O_{27}S_2Ba$. The chemical properties of the barium salt thus prepared, and also of the free acid, are described. It is suggested that sulphite waste liquor, in the form of barium ligninsulphonate, be used for the preparation of positive electrodes for accumulator cells. The concentrated solution and the precipitated acid neutralized and dis- waste liquor is precipitated with sodium bisulphate solved with barium carbonate or, more economically with chalk. Good deposits are obtained in an electrolyte containing 24 g. of sulphuric acid per liter and the equivalent of 0.5% of barium ligninsulphonate with a current density of 1.5 milliampere per sq. cm. -A.P.-C.

A-1. Experimental Study of the Significance of "Lignin" Color Reactions. ERNEST C. CROCKER, Mass. Institute of Technology, Cambridge, Mass. **J. Ind. Eng. Chm.**, xiii, 625-627, (July 1921); **Paper**, xxviii, No. 26, 22-23, 32, (Aug. 31, 1921). The Maule test was found to give a distinct red color only in the case of deciduous woods and may prove valuable as a means of distinguishing between deciduous and coniferous woods, in mixtures of chips. Apparently no color test is an indicator of **Lignin**, but of traces of materials (aldehydic for most of the tests) which usually — perhaps alawys — accompany lignin. The ferric ferricyanide test (acting as it does in the presence of almost any reducing agent) is too general to be considered as a "lignin" reaction. — A.P.-C.

A-3. Bamboo By-Products. SINDALL and BACON. **Paper Makers' Monthly J.**, lix, 189, 191, (1921); **Chem. Abs.**, xv, 2985, (Sept. 10, 1921). A discussion of the Rinman process as applied to bamboo waste liquor. The estimated by-products, based on a 10,000 tons air-dry pulp mill, are methyl alcohol 388,000 kilos, acetone 330,000 kilos, ethyl-methyl-ketone 220,000 kilos, light oil (gasoline) 220,000 kilos, heavy oils (Diesel engine) 572,000 kilos. These amount to nearly 10% calculated on the original raw bamboo. — A.P.-C.

A-3, A-15. Straw Pulp as a Substitute for Groundwood for News Print. WALTER CLIFFORD, Hummel-Ross Fibre Corporation. **Paper Ind.**, iii, 1105-1106, (Nov. 1921). The author briefly indicates the necessity of finding a substitute for wood for the manufacture of news print, shows the advantages of straw for the purpose, and also the reasons which have prevented its use up till now. He then describes a modified sulphate process suitable for the purpose. It consists essentially in using a liquor of about 12° Bé in which the percent of caustic is only about one-half the percent of sulphide (e.g., Na_2S 25%, NaOH 12.5%, Na_2CO_3 62.5%), and cooking about two hours in the same way as in the usual sulphate process. After cooking the pulp is washed, bleached with about 3% of bleaching powder, washed again, beaten a short time, and sent to the machine. No screening is required. The yield is about 65 to 70%, and the news print can be made entirely from straw. — A.P.-C.

A-3. Silica Content of the Reed Phragmites Communis Trin. F. HERIG. **Cellulosechem.**, ii, 44-47, (1921); **Paper**, xxviii, No. 20, 24-25, (July 20, 1921). The reed differs from other plants used in paper making in its high ash and silica content, which average 5.83 and 4.42 per cent, respectively. — A.P.-C.

A-3. Chemical Composition of the Reed Phragmites Communis, Trin. Cellulosechem., ii, No. 3; **Paper**, xxvii, N. 13, 16-17, (June 1, 1921). Translation by Clarence J. West. — A.P.-C.

A-4. The Analysis of Straw Pulp for Alkali-Content EMIL HEUSER and THEODOR BLASWEILER. **Papierfabr.**, xix, 509-514, (May 27, 1921); **Paper**, xxviii, No. 19 22, 30, (July 13, 1921). The following method for the alkali content has been found to give accurate results . For total alkali 10 g. of dry pulp is treated with decinormal sulphuric acid and the excess acid titrated. For fixed alkali, that is, the portion that is not extracted by washing with water, 10 g. of the pulp is heatd with 400 cc. water, pressed, treated for several hours with decinormal sulphuric acid, and the excess of acid titrated. The free alkali (that is, the portion than can be washed out with water) is obtained by difference. Decinormal acid is used since centinormal is too sensitive and gives slightly inaccurate results, and normal acid requires a large quantity of pulp. — A.P.-C.

A-4. Determining the Quality of pulp from its Lignin Content. HANS KRULL. **Papierfabr.**, xix, Fest-u. Ausland Heft, 65-70, (1921); **Chem. Abs.**, xv, 2983, (Sept. 0, 1921). For Mitscherlich pulp the following relations are given: 6.5-7% lignin, hard; 5.5-6 p. c., soft; 1.0-2.0%, bleached. For Ritter-Kellner pulp; 7.5-9.5% lignin, hard; 6.5-7.5 p. c., normal; 4.5-6.5 p. c., soft. — A.P.-C.

A-5, K-4. Groundwood and Waste Paper in the Manufacture of Paper. E. ARNOULD. Papier, xxiv, 48, (Feb. 1921). Translation by A. Papineau-Couture in **Paper Ind.**, iv, 529-531, (July 1922). See this journal, xix, 986, Sept. 22, 1921. — A.P.-C.

A-7, F-4. Use of Lime in Soda and Sulphate Pulp Manufacture. G. K. SPENCE, New York and Pennsylvania Co. **Paper Mill**, xlv, No. 24, 2, 48, (June 24, 1922) **Paper**, xxx, No. 19, 7-9, (July 12, 1922). **Pulp and Paper**, xx, 807-809, (Sept. 21, 1922.) A brief description of present day practice in causticizing with a plea for closer co-operation between lime manufacturers and pulp makers. — A.P.-C.

A-8, F-1. Control of Causticizing Lime by Determining Active CaO Content. G. K. SPENCE. **Paper Ind.**, iii, 1095-1097, (Nov. 1921). After briefly dwelling on the necessity of chemical control of causticizing lime, the author describs and recommends the following method which he has used for several years and which checks actual mill conditions very closely. Weigh 50 g. of coarsely-powderd lime into a crystallizing dish 3.5 inches in diameter by 2 inches deep. Add the required amount of water (found from a curve, and depending on the amount of water already present in the sample), cover, and let stand till slaking is complete. Heat in an electric oven for 1 hour with cover on the dish, remove the cover and heat for 1 hour more, cool and weigh. Heat again and weigh at hourly intervals till minimum weight is obtained. A correction must be applied for the amount of CO_2 absorbed during drying, which is determined by finding the gain in weight on leaving the dish containing the dry slaked lime a given number of hours in the oven. The percent of water originally present is the total amount of water combined with active CaO. A table is given with complete analyses, slaking test, causticizing test, lime used per pan in the mill, and causticity of digester liquor of 10 samples of lime. — A.P.-C.

A-11. A Canadian Source of China Clay. W. M. GOODWIN. **Pulp and Paper**, xx, 711-713, (Aug. 24, 1922). A description of the character, origin and size of the deposits at Huberdeau, Que., of the plant and process used in treating it, of the quality of the pro-47.50%, iron oxide 1.06, alumina 36.98, lime 0.23, duct. A typical analysis of the China clay is: silica magnesia trace, loss on ignition 14.10, potash 0.19, soda 0.18%. It is pure white; the iron content is lower than that of the best Cornish clay imported into Canada, and the grit content is unusually low being about 0.08% in the form of fine particles of quartz not over 0.05 mm. in size. — A.P.-C.

A-14. Testing the Absorptive Capacity of Spinning Paper for Moisture. FR. HERIG. **Papierfabr.**, xix, Fest-u. Ausland Heft, 32-34, (1921); **Chem. Abs.**, xv, 2984, (Sept. 10, 1921). Finely powdered aniline dyes (mahogany red is best but methyl violet is also satisfactory) are sprinkled over the paper (an apparatus is described for arranging this dye in the form of a figure,) and the paper is floated on water. When the water pentrates to the dye, the time is taken. Various samples vary in time of penetration from 9 to 123 seconds. — A.P.-C.

A-14. Some Easy Practical Paper Tests. NORMAN A. ALTMANN. **Pulp and Paper**, xx, 609-610, (July 21, 1922). Various simple tests are described which can be carried out without regular laboratory equipment and which give a good idea of the quality of the paper. — A.P.-C.

A-14. Tearing Strength of Paper. S.WALLIN. **Svensk Pappers-Tid.**, xxiv, 356-357, (1921); **Chem. Abs.**, xvi, 645 (Feb. 20, 1922). A hook is substituted for the pan of the balance and the tearing is accomplished by adding weights to the other pan. The author suggests the concept "tear surface", meaning that surface of the paper being tested whose weight is the same as the force needed to tear the paper. He also suggests "longitudinal tear surface", "cross tear surface", and "average tear surface". It is more difficult to get accurate figures for cross tearing than for longitudinal tearing. — A.P.-C. (We suggest that the word "weight" would be bettter than "surface". J. N. S.)

A-14; K-18. The Testing of Cardboard: Bulk and Calendering. RAYMOND ISNARD. **Papeterie**, xliii, 102-106, (Feb. 10, 1921). Bulk is the ratio of the volume to the weight of the cardboard; it is therefore the reciprocal of the density. By measuring the length, breadth, and thickness are obtained the apparent volume and the apparent bulk, M_a; and by measuring

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PULP AND PAPER NEWS

The Stationers' Bowling League has been formed in Montreal, with representatives of the following six firms —Jos. Fortier, Limited, Dawson Brothers, Canada Loose Leaf Company, T. V. Bell, Limited, and the Benallack Lithographing Company, Mr. J. Sutherland, of the Canada Loose Leaf Co., is president, and Mr. J. K. Thompson, of T. V. Bell, Limited, secretary. Spoons are awarded each week for the high single and high three strings.

Mr. J. B. Larkin, of the Federal Paper Company, Limited, Montreal, and Mr. R. M. MacLean, of the Howard Smith Paper Mills, Limited, Montreal, were off on a fishing trip last week.

Mr. Angus McLean, president of the Bathurst Company, Limited, Bathurst, N.B., was in Montreal last week.

Major C. MacLaurin, of the Canadian Air Force, who was recently drowned in a seaplane accident on the Pacific Coast, was the son of Mr. L. K. MacLaurin of Lachine, P.Q., and the cousin of Mr. J. P. MacLaurin, woods manager of the St. Maurice Paper Company, Limited, Major MacLaurin's body was shipped last week to England, for burial at Bernbridge, Isle of Wight.

Mr. F. Ritchie, of the Wayagamack Pulp and Paper Company, Three Rivers, was a visitor to Montreal last week.

The new slasher of the Abitibi Pulp and Paper Company at Iroquois Falls is about completed, making three in all. The new one, which is a duplicate of the other two, has five saws with a capacity of 1,200 cords a day. The slasher will handle 16-foot pulpwood brought in by the new railway which is being built by the Company from Hughes to Iroquois Falls.

The Tallman Brass and Metal Co., Hamilton, Ont., have just issued their October stock list. The lines of greatest interest to readers of the *Pulp and Paper Magazine* are: babbitt metal, brass and copper rod, sheet and tubing, tobin bronze rod and shafting, and brass and copper pipe, both in standard weight and special sizes to order.

Herbert B. Somerville, formerly Advertising Manager of the Toronto Daily and Sunday World, died October 1st at Toronto, following an operation for appendicitis.

The Royal Trust Company is offering for sale by tender the assets of the Great Eastern Paper Company, including 1,400 acres of timber land (freehold) and 450 square miles of limits in the County of Gaspé, Quebec.

A large extension is being built on No. 1 Machine room at the Ontario Paper Mills, Thorold. This will be used as the finishing room for the produce of No. 1 Machine.

Mr. George E. Challes has just returned from an extended tour through the Northern and Western United States fields. He reports all mills very active and book mills finding shortage of paper stock. Every tendency is to firm up.

The Spruce Falls mill at Kapuskasing, Ontario, is now operating its wood department in preparation for the opening of its sulphite mill at an early date.

A man seldom looks well in a divorce suit.

PROGRESS IN THE FORT WILLIAM PAPER MILL

The new extensions to the plant of the Fort William Paper Company, Limited, situated near the mouth of the Mission River, Fort William, Ontario, are well on toward completion.

On July 3rd, last the first concrete pile was driven in the foundation for their new two machine News Mill. The buildings are of concrete and steel construction throughout, and are of the most modern design. Housed in these buildings will be two inch 194″ Pusey and Jones fourdrinier machines, together with all other necessary machinery and accessories for the complete operation of a news mill.

H. S. Taylor Limited, of Montreal, are the designing Engineers. The construction of the plant is being carried out through the company's own construction department. The schedule of construction has been very rapid and it is believed that news print will be produced before the end of the year.

It is estimated that the capacity of the mill will be (150) tons daily of news print.

The company have had in successful operation for the past eighteen months a 120 ton ground-wood pulp mill.

Power is supplied by the Kaministiqua Power Company, of Fort William.

Officials of the Fort William Paper Company are:

President, Col. Thomas Gibson; Vice-Presidents, Major P. B. Wilson, Col. C. H. L. Jones, G. R. Gray, Esq.; Resident Manager and Treasurer, D. G. Calvert; Gen. Superintendent, W. C. Zieman.

BATHURST ORDERS WALMSLEY MACHINES

The first sod was turned on Monday for the newsprint mill to be built by the Bathurst Co., Bathurst, N.B. It is expected that production will be possible next Spring. The order for the machines was placed with Chas. Walmsley and Co., of Bury, England, of which Mr. William Whyte, Montreal, is Canadian representative. The order calls for two 160″ machines, equipped with Walmsley drive, to run at 800 ft. They will be driven by Walmsley high speed, vertical engines, enclosed type.

SPANISH RIVER ANNUAL MEETING

Toronto, Sept. 28.—Shareholders of 148,000 shares of the Spanish River Pulp and Paper Company, being 83 per cent of the stock, were represented at the annual meeting here today of the Spanish River Pulp and Paper Company Limited. The old board of directors was re-elected, and at a subsequent meeting of the board, George H. Mead was re-elected president. Other officers elected were Thomas Gibson and P. B. Wilson, vice-presidents; J. G. Gibson, secretary, and A. H. Chitty, treasurer.

The business at the shareholders' meeting was largely routine. In reply to one stockholder, the president said that the company had been a purchaser of ground wood pulp from the Fort William Paper Company, and had become financially interested in that company. It was further stated that with the completion of its electrical plant at Sturgeon Falls, the Spanish River Company was now able to secure ground wood pulp through its own plant.

UNITED STATES NOTES

According to a report of its directorate, the outlook for the American Writing Paper Company is more favorable than for many months. Heavy orders have been taken recently at rising prices and plants are running at about 85 per cent. of normal. Improved earnings are expected to go a long way towards offsetting the relatively poor showing made in the first five months of the year through heavy charges for depreciation and expenditures for improvements. The company's cash resources exceed $2,250,000, while current liabilities are less than half that amount.

To facilitate dealings in waste materials in New York City and foster the growth of that center as a real national market in such products, the National Association of Waste Material Dealers is working on a plan to establish an exchange for the purpose. The September meetings of the Association took up the question in a preliminary way, and the basis for the consideration of the necessary steps was laid. As outlined at present, the exchange scheme involves the holding of bi-monthly meetings at which auction sales of considerable size can go on side by side with private trading on a large scale. In this way, not only will prices be to a degree made uniform and standardized according to conditions of supply and demand, but improvements in grading, etc., can be carried out quite generally.

The value of the airplane forest patrol was forcibly demonstrated recently near Roseburg, Ore. One of the State Foresters in that city had received reports from the lookouts in his territory that there were no fires to be seen. It happened that just at that particular time he decided to accompany one of the Army Air Service pilots engaged in patrolling the Oregon forests. He had not proceeded very far on his aerial journey before he realized that the reports he had received from his lookouts were not as reliable as he was led to believe. To his great consternation he discovered that he had no fewer than twelve real fires on his hands which no one knew anything about. Needless to say the State Forester is now converted to an aerial forestry patrol for life.

Some of the big paper manufacturing companies in Maine have been compelled prematurely to the level large areas of timber which have been threatened with destruction by the ravages of the spruce bud worm. The pulpwood thus cut is being stored up for future use. In several localities large tracts of what was fine growth of spruce has been made by the bud worm to appear as though devastating fires had run through them.

An outline of the general situation with regard to present costs in the paper industry is given in the monthly bulletin of the American Paper and Pulp Association which states that the average coal price to paper mills has increased more than 60 per cent. over the prices paid before the strike. Inasmuch as the average consumption of coal in the paper industry is 1.3 tons for every ton of paper produced, the serious condition of the industry is apparent, says the bulletin. "While the outlook for the future has been somewhat dimmed by the coal and railroad strikes," continues the summary, "the best authorities are all agreed that there will be good business by the first of the year." Meanwhile, it is stated, the financial disturbances of the last year have caused a tendency among the mills to study costs carefully, and it has been found that the cost of marketing paper has been considerably increased by the small order business which developed during the period of depression. Special cost committees are now at work in the various branches of the industry, while the technical men are studying means of preventing waste by utilization of what was formerly waste material.

Charges that wall paper is being dumped on the United States market from Canada have been found groundless by the Customs Service which has been investigating similar charges relative to other paper commodities. No evidence has been found to substantiate any of these allegations.

N. M. Brisbois of the Sutherland Paper Company has again been chosen chairman of the Michigan Division of the American Pulp and Paper Mill Superintendents' Association. All other officers were re-elected for another term at the Association's annual meeting held recently in Kalamazoo. In accordance with expansion plans, Clyde E. Nicely of the La Salle Paper Company, South Bend, Ind., was named temporary chairman of a division of board mill superintendents which will have its headquarters in Chicago. It was announced that a Pennsylvania division is also being organized under direction of John A. Bowers of the Hammermill Paper Company, Erie, Pa., and that the mills at Niagara Falls and Buffalo have been transferred to membership in the Canadian division. There will henceforth be two sections in the Canadian branch, the Eastern at Montreal and the Western at Toronto. Peter Massey, national treasurer of the organization, plans to assist in the re-organization and development of the Eastern Canada division. Holyoke, Mass. may be made the headquarters of a division taking in the mills of Massachusetts, Vermont, and Connecticut.

The Governors of twenty-eight States have just been notified that 25 per cent of the $3,421,531 received from timber sales, grazing permits and other sources of forest revenues for the last fiscal year will be distributed by the United States Forest Service. This money is returned to the States in which national forests are located for expenditure upon schools and roads. An additional 10 per cent. of the total receipts is transferred to the Forest Service for the construction of roads and trails within the forests. This sum for the present year amounts to $338,576. The total, which aggregates over $1,000,000, will be prorated among the twenty-eight States in proportion to the receipts from the national forests within their borders. Since the establishing of the national forests, the sums returned to these States have steadily increased, amounting to-day to almost fourteen million dollars, which has been directly contributed to the development of the States by the national forests included in their boundaries.

According to Secretary-Manager Franklin W. Heath of the Typothetae of Philadelphia, the graphic arts industries are planning to assemble for use at the Philadelphia Sesqui-Centenniel Exposition in 1926 one of the most complete and comprehensive exhibits ever shown of paper making—past and present—the conversion of paper into printed, engraved and lithographed matter, and into its many other uses. This will be the first time in the history of world's fairs that a complete paper-making, or graphic arts exhibit has been shown.

the volume by immersion in water are obtained the true volume and the true bulk M_t. The difference between the two represents the volume of air contained in the cardboard, and this is inversely proportional to the pressure exerted during calendering.

$$\frac{M_a}{M_a - M_t} = K$$ is called the **coefficient of calendering.**

An example is given to show how the latter, nature of the stock and the treatment to which it was sujected, and thus determine its suitability for the purpose in view. — A.P.-C.

A-14; K-18. Analysis of Cardboard: Bulk and Calendering. RAYMOND ISNARD. **Paper Trade J.,** lxxiii, No. 12, 44, 46, (Sept. 22, 1921). Translation by A. Papineau-Couture. See preceding abstract.-H.E.-W.

A-14. The Testing of Cardboard: Elasticity or Rigidity, and Folding. RAYMOND ISNARD. **Papeterie,** xliii, 578-586, (July 10, 1921). Translated by A. Papineau-Couture in **Paper Trade J.,** lxxiii, No. 16, 40, 42, 44, (Oct. 20, 1921). The general principles of the testing of the strength of beams may be applied to the testing of the rigidity, or, what comes to the same thing, the elasticity, of cardboard; and if a strip of cardboard be placed on two supports at a distance **1** apart and subjected to a load **P** at its center, the deflection **f** is $\frac{Pl^3}{48.EI}$ where **E** is the modulus of elasticity and **I** the moment of inertia of the section. In the apparatus described a strip 1 × 10 centimeters is supported on knife-edges exactly 50 mm. apart, so that 25mm. project at either end. A graduated lever, pivoted at one end, carries a third knife-edge by means of which the load is applied to the middle of the test strip. The weight of the lever and knife-edge is counterbalanced by means of an adjustable counterpoise, and the load is carried by means of a rider (or riders) on the lever arm. The deflection on applying the load is read by means of a mirror fixed to the lever and a scale graduated in mm. Then if **d** and **D** be the respective distances of the deflecting knife-edge and of the scale from the mirror, **P** the equivalent load at the center of the test strip, **n** the reading on the scale and **e** the thickness of the cardboard, $E = \frac{6250P}{ne^3} . \frac{D}{d}$.

As the possible error in the determination of the thickness is about 2 per cent, and **E** involves **e**, the limit of accuracy is not greater than 6 per cent. **Another Test.** If the test strip be folded completely over (presumably without creasing), weighted in this position for 15 minutes, released and allowed to stand for several hours, is will be noted that it finally attains a definite "fold angle", which varies from 20 to 25 degrees for very rigid cardboard to 60 degrees for roofing felts. Comparative results on different samples can be obtained only by applying the test in exactly the same manner in each case. If properly carried out this test will class boards in the same order as the determination of elasticity. An examination of the fold can furnish valuable information as to the composition and quality of the cardboard. — A.P.-C.

A-15. Alkali Cellulose and the Composition of Cellulose. P. KARRER. **Cellulosechem.,** ii, 125-128, (1921); **Chem. Abs.,** xvi, 644, (Feb. 20, 1922). After discussing his earlier work on caustic soda addition compounds with anhydrosugars, the author shows that cellulose in 30% caustic soda forms the complex $C_{12}H_{20}O_{10}NaOH$ (10.69% NaOH); cotton under similar conditions absorbs about 13% caustic soda. This caustic is gradually washed out by water, and in dilute solutions the amount of caustic absorbed is determined by the amount of water present. The author believes that the parent compound of cellulose is cellobiose anhydride and that cellulose should be writteen $(C_{12}H_{20}O_{10})x$. From the heats of combustion it is further believed that x is small, probably 2 or 3, which agrees well with the results of Herzog and Jancke who conclude that cellulose is $(C_6H_{10}O_5)_4$. Partial valences are probably rsponsible for the union of the anhydrosugar molecules. — A.P.-C.

B. — Forestry

B-3. Essay on Forest Conservation. P. SWANSON. **Pulp and Paper,** xx, 689-692, (Aug. 17, 1922). A discussion of the forest situation in Canada with suggestions as to the proper steps to ensure a permanent adequate supply of wood. Fire prevention measures should be along the lines of a strict enforcement of the permit system of slash burning, permit system for hunters, prospectors, etc., close and efficient inspection of smoked-stack screens of engines operating in wooded districts, and improvement of the fire-ranging system. Careful and rigid inspection should be enforced to detect and check ravages from insect pests. A high export tax on fee-land wood is advocated, to prevent exportation. — A.P.-C.

B-9. The Forests and Forestry of Finland. LAURI ILVESSALO, Helsingfors University. **Mo. J. Bank of Finland; Pulp and Paper,** xx, 625-626, (July 27, 1922). A sketch of the forest resources, their exploitation and care, and of the export of forest products. — A.P.-C.

B-0; C-5. The Toxicity of Various Fractions and Combinations of Fractions of Coal-Tar Creosote to Wood-Destroying Fungi. HENRY SCHMITZ and S. M. ZELLER, School of Forestry, University of Idaho, and Oregon Agricultural College. **J. Ind. Eng. Chem.,** xiii, 621-623, (July 1921). — A.P.-C.

B-0; C-5. Studies on the Toxicity of Wood Preservatives. III. C. J. HUMPHREY, RUTH M. FLEMING, and E. BATEMAN, Lab. of Forest Pathology, Bureau of Plant Industry, in co-operation with the Forest Products Lab., Madison, Wis **J. Ind. Eng. Chem.,** xiii, 618-621, (July 1921). The fungus used for the tests was **Fomes Annosus** (Fr.). The advantages of the petri-dish method for carrying out the tests are enumerated. — A.P.-C.

E. — Acid Processes of Pulp Manufacture and Equipment

E-2. Tanning Material from Sulphite Waste Liquor. A. SCHMIDT. Can. patent 222,839, Aug. 22, 1922. After removing the sugar, the liquor is concentrated to half its volume, a current of chlorine is passed through it, the precipitate is filtered off and is treated rinated product forms soluble salts with alkalis and hot with a chlorate and hydro chloric acid. The chlorinated product forms soluble salts with alkalis and partially insoluble salts with heavy metals. They can be used as tanning material resin substitutes, etc. — A.P.-C.

E-2. Methanol in Sulphite Alcohol. H. BERGSTROM. **Svensk Rappers-Tid.,** xxiv, 927-928, (1921); **Chem. Abs.,** xvi, 610, (Feb. 20, 1922). A curve is given showing the percent of methanol in the solution plotted against that in steam. The distillation factor for solutions containing 1 to 10% methanol is about 1.5. It is possible to separate methanol completely from ethanol at small expense. — A.P.-C.

E-2. Acetaldehyde and Paraldehyde Content of Crude Sulphite Alcohol. E. HEUSER, K. SCHWARZ, and H. MAGNUS. **Papierfabr.**, xx, 1-5, (1922); **Chem. Abs.**, xvi, 827, (March 10, 1922). Two samples of unrefined alcohol contained 2.61 and 5.48% acetaldehyde and 1.28 and 0.54% paraldehyde. It is possible to fractionate a 15% acetaldehyde mixture (methanol, ethanol, water, and acetaldehyde) in two distillations, so that the first fraction contains 94% acetaldehyde. sulphite alcohol containing less acetaldehyde requires at least three distillations to reach a 90% acetaldehyde content. — A.P.-C.

E-2. A Common Purification Plant for Sulphite Waste Products). H. WALLIN. **Svensk Pappers-Tid.**, xxiii, 317-318, (1920); **Chem. Abs.**, xvi, 829, (March 10, 1922). A committee, of which Wallin is chairman, has communicated to the Paper Pulp Office a plan to Sulphite alcohol containing less acetaldehyde requires take the raw products from Swedish sulphite mills which do not already reclaim their waste products and work them up at a central plant for oil of turpentine and methanol. Plan and a budget are presented which can handle 275 tons of raw oil and 475 tons of raw liquor and reclaim 200 t. of turpentine, 50 t. of other oils, 375 t. of methanol and 100 t. of second grade wood-spirit. The estimated income from the reclaimed materials exceeds the expense of the raw materials and operation by more than enough to pay for the plant needed. — A.P.-C.

E-3, E-0. Use of Rotten and Stained Wood for Making Sulphite Pulp E. SUTERMESITER **Pulp and Paper,** xx, 513514, (June 22, 1922). Detailed results of two small-scale cooks, one of sound wood and one of moderately hard wood attacked by dry rot, are given. The fiber from the sound wood was of a good light color, while that from the rotten wood was much darker and contained numerous very brown shives. The yield per ton of wood is higher with the rotten wood, but it is lower per 100 cu. ft. of solid wood. The fiber from the rotten wood was much weaker and practically unbleachable. Comparative cooks were also run on sound clean wood, on sound wood which had become discolored or stained a grayish brown color, and on mixture of the two. The yields were practically the same in the three cases. The fiber from the stained wood is darker than that from the clean wood and is full of dark- colored shives. The bleach consumption is much higher in the case of the fiber from stained wood, and some brownish yellow shives remain in the bleached fiber. — A.P.-C.

E-4. Modern Roasting and Washing Appliances for the Production of Sulphite Liquor. Papir-J., ix, 50-51, 56-57, (1921); **Chem. Abs.**, xvi, 829, (March 10, 1922). To minimize the formation of sulphur trioxide the gas must be transferred to the washing tower through as short a distance as possible and should be cooled as quickly as possible. Construction of ovens and towers is described. Analysis of a sample gave Total SO_2 3.20%, combined 1.09, free 2.11, lime 0.94, SO_3 0.03, calcium sulphate 0.05. The gases enter the tower at about 500° and go out at 80 deg. The wash water at about 70° circulates at the rate of about 800 liters a minute. The SO_3 content never rises above 0.03%. — A.P.-C.

E-4. Causticizing in the Presence of Silicates. RALPH H.McKEE and THOMAS H. HILTON, Columbia University. **Paper,** xxx, No. 22, 9-10, (Aug. 2, 1922) **Pulp and Papr,** xx, 693-694, (Aug. 17, 1922). Experiments are dscribed which show that it is possible to obtain good causticization of soda solution containing even in large proportions, by allowing sufficient time for the reaction to go to completion. A study should be made of the rate of the reaction with the particular materials used in the mill. — A.P.-C.

Sulphite Cooking. EDWARD SIMONSON. **Paper**

E-5. Advantages of Using Superheated Steam for

Ind., iii, 1248-1249, (Dec. 1921). Brief general discussion. — A.P.-C.

F. — Alkaline Processes and Equipment

F-4; M-0. Multiple Effect Evaporation. BURTON DUNGLINSON. **Chem. Met. Eng.**, xxv, 110-115, (July 25, 921). Outline of the development of evaporator design since 1885, together with discussion of the Multiplex Film Evaporator as regards features of construction and operation and a comparison of the multiplex with other types. — A.P.-C.

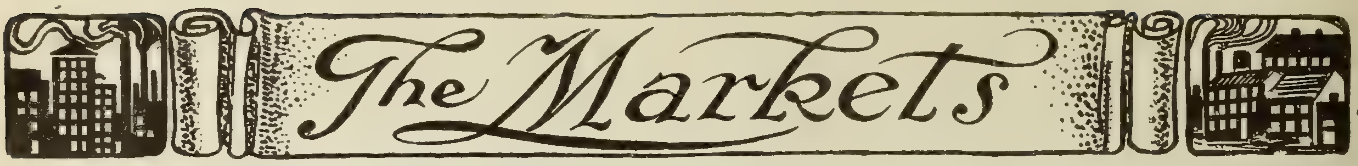
K. — Paper Making and Equipment

K-0; N-0. Vacuum Drying. C. O. LAVETT and D. J. VAN MARLE, Buffalo Foundry and Machine Works, Buffalo, N.Y. **J. Ind. Eng. Chem.**, xiii, 600-605, (July 1921). A description of the general characteristics common to all vacuum dryers which tend to differentiate them from other types, comprising the field, limitations, advantages principle, and method of application of heat, together with a description of the rotary, shelf, and drum types. —A.P.-C.

Seifensieder Ztg., xv, 296, (1921); **Rev. Prod. Chim.**, xxiv, 417, (July 15, 1921). During the war coumarone resins were used in Germany for sizing paper. Attempts were made to saponify them also so as to use them in the same manner as the natural resins; but this could not be done either with caustic alkalis in alcoholic solution under a pressure of 8 atmospheres, with soda lime, or with sulphuric acid. They were used by emulsifying them by means of glue or rosin soap and adding to the pulp in this condition. Since the end of the war the use of coumarone resins for sizing has almost entirely ceased owing to the entry of French and American resins into the country. — A.P.-C.

N. — Power Generating and Equipment

N-4. Elctric Steam Boilers in Pulp Mills. CAPTAIN OLSSON. **Papir-Journalen**, Dec. 4, 1920; **Pulp and Paper,** xix, 805-806, (Aug. 4, 1921). Translation by Paul Bartholow. Discussion of the advantages of electric steam boilers, and of their use in Swedish pulp mills. The Apparat Aktiebolaget, of Stockholm, manufacture both low and high tension types of electric boilers, using current up to 20,000 volts, and of capacity up to 8,000 kilowatts. The electrode type of boiler and its method of operation is briefly described. At the pulp and paper mills of the Wargon Company there are seven electric boilers, each of 2,000 kilowatts, taking current at 10,000 volts and generating steam at 12 kilos (about 160 lbs.), which supply all the steam necessary for the manufacture of both sulphate and sulphite pulps. The boilers have been eminently satisfactory, their operation is simple, convenient and clean, and it is estimated that they effect a saving of about 10 per cent. — A.P.-C.



The Markets

CANADIAN TRADE CONDITIONS

Montreal, October 3 — The improvement in the pulp and paper industry, recently noted, is gathering force. Prices are advancing all along the line, and this week we have to report further rises. We have already pointed out the stronger values of pulp, boards, waste papers, etc., and to these must be added book, writings, tariff, and other papers. The higher quotations are owing to increased cost of coal, pulp, and in fact most of the raw materials of the paper maker.

Locally the jobbers are doing fairly well, while the mills report that the business in hand is of a decidedly encouraging character. The demand is undoubtedly growing, and the immediate outlook is certainly of a satisfactory nature. This must be qualified by the statement that a great deal will depend on development in connection with the Eastern situation. So far as Canadian trade generally is concerned, the words of Mr. E. W. Beatty, the president of the C. P. R., are worth consideration. He finds there is a steady improvement in business conditions throughout the Dominion, largely influenced by the Prairie crop, and he sees no reason why there should be any interruption to this condition.

"Of course, it is inevitable that we shall run into air pocket," he said, "but this has always been the case. I do not look for any big boom in business, nor do we want one now, but prospects at the moment are decidedly satisfactory, as far as I can learn, from coast to coast."

The newsprint position has not yet changed to any extent. The mills are still running to capacity, with the demand as strong as ever. The figures published by the Federal Trade Commission, Washington, indicate that production in the U. S. A. is steadily rising; that in August it was 12 per cent above the average of a five-year period, and that as compared with August, 1921, there was a gain of 30 per cent. There is nothing in the situation which detracts from the general opinion that a moderate increase in price is certain to take place for 1923 deliveries. At the moment newsprint and pulp manufacturers and also shippers of pulpwood and lumber are handicapped by the scarcity of cars. American railroads are delaying Canadian cars, preferring to pay rental charges rather than return them. According to Mr. C. P. Riddell, secretary of the Railway Association of Canada, there is an excess balance of 19,000 Canadian cars in the States, which is 9,000 more than normal. The coal situation and the strike of railway shop employers are responsible for the detention of the cars. The position as it affects Canada is aggravated by the fact that the detention comes at a time when cars are needed for the Western grain movement. The matter has been taken up with the American railroads, and prompt action by the latter is promised.

In our last issue we pointed out the probability of an advance in papers. This materialised during the latter part of the week, and is now in force. The rise affects book, writings, tariff papers, and Bristol boards, and is ½c. per pound. Thus book papers are now quoted: No. 1, s. c., 8½c. and 9c; No. 2, s. c., 8c. and 8½c; and No. 3, m. f., 7½c. Writings are from 9½c. to 11c., and antique laid paper 9½c.

The demand for boards continues to be active. The mills are very busy, with the prospect of good business for some time. The position in the United States has a strong influence on that in Canada, and while the mills across the border are able to secure such a large volume of orders there is no chance of that competition here which forced down prices to an unprofitable level.

Waste papers are very strong, with a hardening tendency. Rags command a ready sale, at very firm quotations. Roofing felts are in good request.

The pulp market is stiffening. We have already recorded the advance in bleached, which is selling readily at the higher values. Mechanical pulp is also on the upgrade, with a considerably better demand, while sulphite is firming up. Kraft pulp is a particularly strong spot,— in fact the entire market has a very healthy appearance.

The pulp and paper companies in the St. Maurice Valley are cutting pulpwood on their burnt-over areas, and are thus saving a lot of the wood. There is a difficulty in obtaining sufficient help, notwithstanding that wages have risen from $30. per month to $40 and $45, which are now the current rates. Last season there was a surplus of labor at $30 per month and under, but the increase in construction and other work this year has absorbed a large number of men and also forced up wages.

NEW YORK MARKETS

New York, Sept. 30. — (Special Correspondence) — Almost every day witnesses additional signs of general improvement in the paper industry, of a steady increase in business, of broader operations of mills and of greater firmness in prices. The industry appears to be on the threshhold of a period of prosperity; in fact, there are numerous indications to the effect that this period has actually started. With commercial and industrial conditions gradually assuming a normal status, consumption of paper of all kinds is on the rise, with the obvious result paper jobbers and merchants are securing much more business and are busier than they have been in a long time, while manufacturers are running their plants at a rate closely approximating capacity.

One of the best illustrations of the prevailing active position of the paper industry is to be had in the report of the Federal Trade Commission on the print paper situation in August. The production of newsprint last month by United States mills scored a big jump over that of the preceding month, a total of 133,236 net tons of total newsprint being manufactured by 83 mills in August, compared with 120,839 tons in July, showing an increase of 12,397 net tons. These figures infer that print paper mills recovered from the usual mid-summer reaction in business a good deal sooner this year than ordinarily, and judging from the bullish reports received during the past few days, it is probable that the September report will show an even greater increase in output this month. August production of print paper was larger than in any August for the past five years, the nearest approach being that in August, 1920, when an output of 128,818 tons was reached. Moreover, the Commission's report shows that despite the large jump in production last month mill stocks of print paper declined considerably. The report also shows that production of print paper in this country thus far this year or up to the end of August is close to the record output established in 1920, a total of 944,217 net tons of newsprint having been manufactured by domestic mills during the first eight months of 1922, compared with 811,972 tons in the corresponding period of last year, 1,018,296 tons in the same time of 1920, and 898,483 tons in 1919.

The newsprint market is exceedingly firm. It is surprising how active the demand is; publishers are coming into view as buyers repeatedly and seem imbued with a lone idea—that of covering their requirements over the balance of the year. The most gratifying feature of the situation is the added demand that is being felt; that is, the additional buying engaged in the publishers over and above their contract supplies. Transient demand also is steadily broadening, and there seems little doubt that mills in the States will reach a new high level of newsprint productiton during the present year.

Book papers continue to strengthen in price, a good many manufacturers having again marked up quotations a quarter of a cent per pound. About the bottom price quoted on machine finished book at present is 6 cents a pound f.o.b. New York, and not much supply is available at this basis, most producers asking between 6.25 and 6.50 cents. Coated book is higher at from 9.50 cents upward, depending on the grade and tonnage, one reason advanced for the rise in this kind of paper being the tariff placed on casein. There is a growing demand for book paper and mills are operating today at a better rate of capacity than in over a year.

Kraft wrappings evince a strong tone and prices on this class of paper have been advanced in some quarters. New England mills are quoting No. 1 domestic kraft wrapping at 6.75 cents a pound to jobbers f.o.b. mill, which means consumers are paying well above 7 cents on a delivered basis. Tissues are firm and exhibiting increasing activity, jobbers and consumers alike now laying in stocks in preparation for the pre-holiday season.

The board market continues very firm. Plain chip is quoted at $60 a ton in New York, and news board at $62.50 to $65, and it is declared that manufacturers are flatly refusing orders at less than these figures. Single patent coated chip is quoted at $75 a ton, straw board at $55 and 85-test jute liner board at $95 per ton. Board mills are indeed busy, and there seems no let up in the demand for board.

GROUND WOOD — Prices on mechanical pulp evince a rising tendency. Reports say that most producers are sold up for the remainder of the year, and dealers and mill agents assert that it is a fact that consumers in search of transient supplies have to do a good deal of shopping over the market before locating available pulp. Mills in Upper New York State are apparently having no trouble in securing $32 to $33 a ton f.o.b. grinding plants for prime spruce ground wood for prompt shipment, and even higher prices than these are paid in instances where a low freight is involved between producing and consuming points. Ground wood brought down to New York from Nova Scotia by schooners is freely bringing $34 a ton f.o.b. this port to nearby board and paper mills.

CHEMICAL PULP — By far the most important development in chemical pulp is the advance in prices of bleached sulphite. The leading producers in the United States quickly followed the lead of Canadian manufacturers in raising quotations on No. 1 bleached sulphite $10 a ton from 4.50 to 5 cents a pound, and this event has served to strengthen prices on practically all kinds of chemical wood pulp. Kraft is particularly firm. Importers are reported asking 2.75 cents a pound ex-dock New York for No. 1 Scandinavian kraft, while domestic

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
MAURICE LONDON, Secretary

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

kraft of strictly No. 1 quality has sold up to 3.25 cents f.o.b. pulp mills. Foreign unbleached sulphite of No. 1 grade is quoted at 2.75 to 3 cents on the dock, and easy bleaching at 3 to 3.25 cents. Soda pulp is firm at 4 to 4.25 cents at producing plants, and it is understood that most of the available supply of this kind of pulp for the remainder of the year is contracted for. Sentiment in the pulp trade is bullish. Importers who have just returned from Europe report conditions in Scandinavia far from favorable, it being stated that Sweeden is very nearly sold out for the rest of this season and that American consumers cannot hope to get any additional supplies of consequence from this source to that which they already have contracted for. Moreover, prices on the other side of the Atlantic are said to be jumping at a rapid rate.

RAGS.—There has been a little sagging of demand for roofing rags during the present week but evidently prices have been unaffected. Dealers seem disinclined to accept orders at reduced figures, and, as far as is learned, market levels remain about as last reported. Around 1.45 cents a pound f.o.b. New York is the accepted quotational basis on No. 1 roofing stock, and 1.35 cents on No. 2 packing, while foreign dark cottons are bringing 1.30 to 1.35 cents ex-dock New York. Old white rags show an advancing trend, and packers generally ask at least 6.50 cents for No. 1 repacked whites. Thirds and blues are somewhat firmer at from 2.25 to 2.50 cents at shipping points for repacked, and around 1.80 cents for miscellaneous blues. New cuttings rule steady to firm with the lone exception of No. 1 white shirt cuttings, which are just a trifle down in price. Where paper mills were paying 12 cents a pound delivered for No. 1 white shirt cuttings up to a few days ago, purchases have been reported lately down to 11.50 cents delivered.

PAPER STOCK — Increasing strength has characterized the old paper market this week and new high prices have been established in transactions. Board mills have paid $24 a ton f.o.b. New York for No. 1 mixed paper, and as high as $27 for folded newspapers, and the present trend of the market would indicate that prices are due to go even beyond these levels. Old magazines hold very firm at about 2.70 cents a pound New York for No. 1 heavy magazines, and 2.25 cents for mixed books, while old No. 1 kraft paper is bringing 2.50 cents per pound and white news cuttings 2.15 cents. Shavings are steady at around a quotable level of 4.35 cents for No. 1 hard white and 3.90 cents for No. 1 soft white.

OLD ROPE AND BAGGING.—Business in old rope continues fairly active at prices ranging between 6 and 6.25 cents a pound at dealers' shipping points for No. 1 domestic manila rope. Bagging is relatively quiet though a moderate movement is reported at about 1.25 cents a pound for No. 1 scrap and 1.05 cents for roofing bagging.

IN OTHER WORDS, SHE DID

"Once a charming young woman presented a small check at my window," said the speaker at a recent bankers' convention. "She was transparently honest, but had no acquaintances in the bank nor any letters or other papers with her. I asked her if she had a handkerchief or some article of jewelry marked with her name or initials. After a moment's deep thought her face brightened and she asked:

"Would an initialed garter buckle do?"

"Did she get the money?" asked a voice of detached scientific inquiry from the back of the room.

"I must remind you," said the speaker, judicially, "that a bank's relations with its clients often are highly confidential." — *Anglo Bank Notes.*

With the Woodsmen

CHARCOAL TAKES PLACE OF TIMBER

During the last three quarters of a century the Canadian people have permitted the destruction of a forest empire twenty times the size of the three Maritime Provinces.

There have been 4,000 forest fires in Canada this year, each one exchanging valuable public-owned timber lands for worthless wastes of charcoal and fire-weed. It is sheer business stupidity, as inexcusable as the exchange of pounds sterling for paper roubles.

The Canadian citizen of 1750 and 1800 beheld a land wherein the forest was a no-account cumberer of the ground, a trespasser on agricultural soil. He had no lumber industry to speak of, no pulp and paper industry, no highly organized domestic business calling on the forest for its daily needs. But times have changed and yet the public mind refuses to bulge. Agricultural land is not now cumbered by forests, but instead the forest is very much cumbered by worked out farms. There is more cleared land in Canada that should be put back under forest than there is forested land that ever can be profitably cleared for agriculture.

Forest conservation is not a matter of using less wood but of growing more. Eighty per cent of the habitable area of the Dominion is unfit for agriculture and adapted only for timber production. The timber crop and minerals are the only possible magnets to new population, new towns, new industries over that untillable eighty per cent. Today in the markets of the world, the crops of Canada represent a precise equivalent of new factories, new employment, new sources of wages. Every year, the market valuation on forested areas rises, in direct ratio to the decrease in America's timber supply and the advance in public demand for forest products. And yet with this enormously valuable public resource owned by the people of Canada, distributing its benefits to every man, woman and child, we who boast of being astute business men are throwing into the furnace ten trees for every one we turn to use. We, the trustees of the Canadian forest, turned to ruin last summer the equivalent of a strip of timber one mile wide reaching from Halifax to Winnipeg.

Slowly, but inevitably, Canada's forest resources must come under scientific management, but right now the peremptory call is to get busy and put out the flames. Why talk of redecorating your house while the dining room is choked with smoke? Unless the present plague of forest conflagration is blocked by the conscious shouldering of responsibility by every Canadian citizen, another ten years will relieve us of all need for worry about the forest resources. But let there be no confusing of plain facts. We must choose between forest fires and forest industries. The two things cannot travel in double harness, nor live in the same pasture. We must choose one or the other and the choice must be made right now, for another few years an inert public will solve the matter quite thoroughly for us.

Forest protection is not protection of a tree. It is an insurance policy on pay envelopes, operating industries, thriving municipalities and public revenues. It means a sense of self preservation and a partnership in upholding the rights of the future. It means that we admit and practise the gospel that we have no right to play the prodigal with a resource that cost us not one penny and that appears in the Will of Providence as the common property of the generations that follow.—(Illustrated Canadian Forestry Magazine.)

PULPWOOD EMBARGO

Readers of the *Pulp and Paper Magazine,* who are interested in the conservation of Canada's natural resources will find something to think about in the following letter.

To the Editor of *The Gazette*:

Sir,—I have just read a letter in *The Gazette* of the 16th instant by an anonymous writer who signs himself "Pulpwood Dealer," stating that, while in the main he is in agreement with my idea of prohibiting the exportation of unmanufactured wood from Canada and that I may be right in my direful predictions of the imminence of our exhaustion of pulpwood supplies in Canada, and also that the proper course is to hold that which we have for future rise in values, based upon domestic necessities and the benefits of advancing the article in value through Canadian manufacture, and while he thinks I am right on all these points, he asks the question:

"How would Mr. Barnjum deal with the following case, which is not hypothetical? Various firms in the United States under contract to supply American paper mills with wood for a term of years have purchased here, there and throughout Ontario, Quebec and the Maritime Provinces large-sized and small-sized pulpwood limits in fee simple. These purchases are based on contracts covering a term of years, the parties furnishing wood being obligated to do so, and in the prevalent assumption that non-interference with export of wood cut on private property in Canada would prevail as a vested right. If prohibition of exportation were enforced by legislation in these provinces, where would the obligated seller of pulpwood stand? Would not his case be one in connection with which he would be liable in damages to the purchasers through no fault of his own? Would he not, therefore, have a case against—recourse against—the Government passing the special prohibitory law under the common law, that his property is immune from confiscation, for that is what such a step would entail?"

In the first place, I am very glad to have the attention of the public again called to the fact that "various firms in the United States have purchased large and small-sized pulp limits in fee simple throughout Ontario, Quebec and the Maritime Provinces" for the purpose of shipping all of this pulpwood to the United States. These purchases are being made at such an alarming rate that we shall wake up some morning and find our fee land wood is all owned on the other side of the line unless immediate action is taken to prohibit the export of pulpwood.

I personally have recently declined propositions from several sources in the United States for every acre of land I own in Nova Scotia.

Only last week I tried to save five thousand acres from being sold in Nova Scotia to United States purchasers, and was a party to its purchase, even up to $20.00 per acre; but before the papers could be signed a thirty-day bond was secured by these parties at $2.00 per acre above my price, showing how keen the competition for timberland really is.

Now, with regard to the question raised by "Pulpwood Dealer": "Where would the obligated seller of pulpwood stand?" My first answer to this is that he would stand exactly where the poor farmer stood who sold his wood to United States mills or dealers who, because the market declined, refused to take delivery of wood contracted for, amounting to thousands of cords at high prices, and left it on his hands to rot, as was the case in many instances during the past year.

All legislation has to be considered from the viewpoint of the greatest good to the greatest number. Now, the number of people who would be injured by an embargo or heavy export tax on unmanufactured wood are so few in number, as compared with the eight or nine millions of our population that would be benefited, that it would seem to me to be ridiculous to give this phase of the question even a passing thought. Surely the selfish interest of a few individuals and foreign corporations cannot be allowed to even retard an act of absolute necessity.

In the public good, the so-called vested rights of the few cannot be considered. If you call it confiscation, then the government of Nova Scotia, confiscated all the undeveloped water powers of the province without compensation. I, personally, lost several water powers without even a protest.

When a man buys property in any country, he does so with the full knowledge that he must be amenable to the laws and regulations that such country may deem it advisable to enact, and should be become dissatisfied with existing conditions the recourse open to him, in the instance under discussion, is to dispose of his timberland, which he can always do at a very handsome profit, or manufacture the wood in Canada.

The highest legal tribunal of the State of Maine has ruled that it was constitutional for a state to regulate even the sized trees a man may cut on his own private land. So we have a precedent in the State of Maine and in Nova Scotia for prohibiting the export of fee land wood, which action is a matter wholly within the powers of the Dominion Government rather than of our provincial governments, as stated by "Pulpwood Dealer."

All of the older wooded countries regulate the cutting of trees on privately owned land, thereby wisely retaining their capital stock intact, cutting simply the annual increment, while in Canada we are rapidly using up and wasting our capital which, if not checked, will end in forestial bankruptcy.

FRANK J. D. BARNJUM

Annapolis Royal, Nova Scotia,
September, 20 1922.

NO MORE SALES OR LEASES OF CROWN LAND

In the interest of forest conservation the Government of Nova Scotia has withdrawn all Crown Land from either sale or lease. This will not interfere with settlement in any way, as there is abundance of vacant cleared land and farms in the Province for all settlement purposes.

This measure, it was stated in the announcement, has become advisable owing to the rapidly diminishing wood supply and is in the interest of the preservation of our waterways, water powers and water supplies.

This is an advanced step on the part of the Government in the line of an effective forest policy.

TREE PLANTING

The Editor, Montreal Daily Star.

Sir,—Last spring a prize of $250 was offered by Mr. Frank J. D. Barnjum to the municipalities in this province which would embellish their parks or streets by planting trees. As Mr. Barnjum is anxious to have this prise awarded, I would invite the differene municipalities to advise me about the results of their work, so as to enable me to judge of the value of their experiments, and thereby to prepare my report on same. I hope that all interested parties will furnish me at once with the necessary data, so that we may demonstrate that we are doing something to increase the beauty of the cities in which we live.

G. C. PICHE,
Chief, Forest Service.

Quebec.

President McKinley

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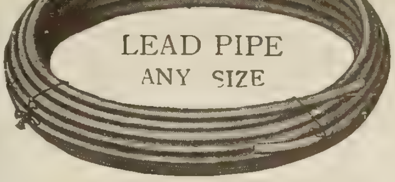

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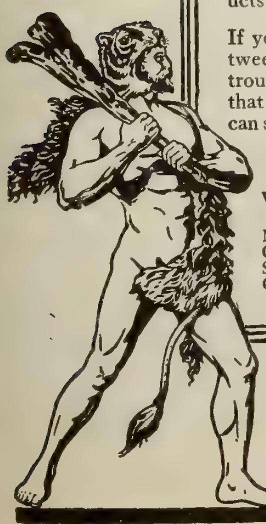

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The sale is to be subject to all existing contracts and a reserve of all accounts receivable and cash on hand.

Tenders for the above will be received by The Royal Trust Company, as Authorized Assignee, up to and including the 3rd day of November, 1922.

The sale will be made en bloc for cash and any intending purchaser must enclose with his tender as a deposit an accepted cheque of a Chartered Bank in Canada, to the order of The Royal Trust Company as Authorized Assignee for a sum equal to ten per cent. of the amount of the tender, which deposit, in the event, of the acceptance of the tender, will be applied on acount of the purchase price, and if the tender is not accepted will be returned. Should any purchaser whose offer has been accepted fail to comply with the conditions of the sale or to pay the full amount of the purchase price within one week from the acceptance of his tender, then, in such event, the said deposit shall be forfeited and shall belong absolutely to The Royal Trust Company, as Authorized Assignee, as liquidated damages

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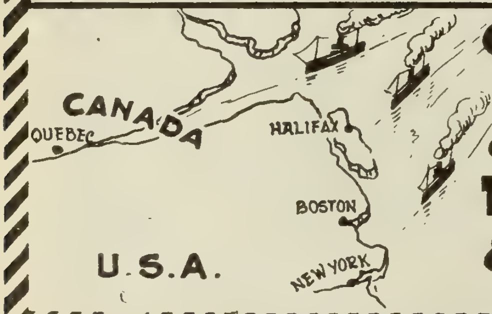

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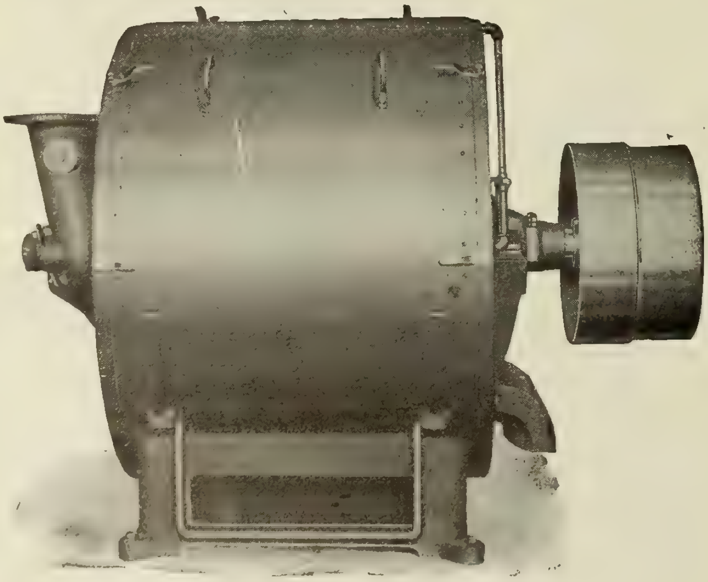

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Mattagami Pulp & Paper Co., Ltd.
Price Bros & Co., Ltd.
Riordon Sales Co., Ltd.
Spanish River Pulp & Paper Mills Ltd.
St. Maurice Paper Co.
Howard Smith Paper Mills.

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Can. Vegetable Parchment Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Wrapping:

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Brompton Pulp & Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Spanish River Pulp & Paper Mills.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd.

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Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Pulp and Paper Trading Co.

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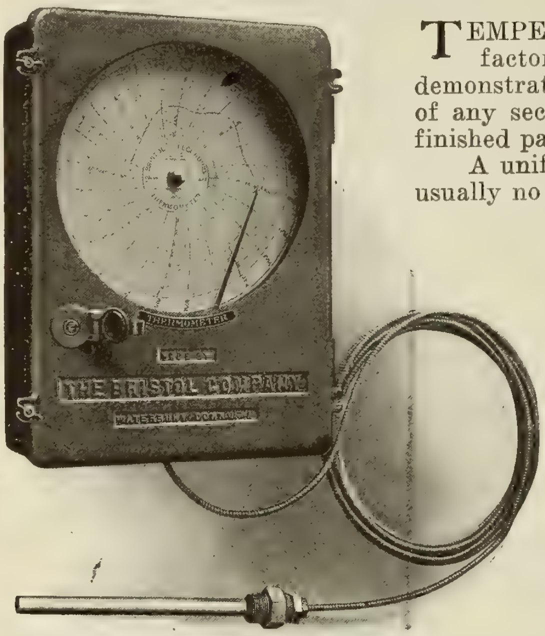
Depends Upon the Uniformity of the Temperature in the Machine Room



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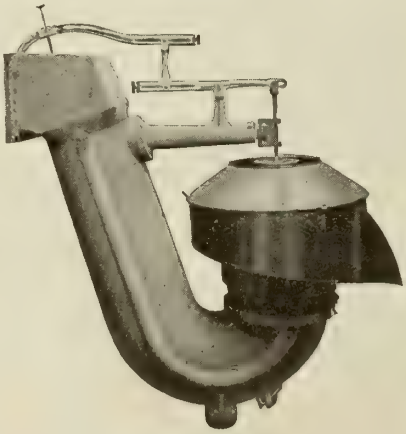

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White W. H.

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Regulators:

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Ontario Wind Engine and Pump Co. Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
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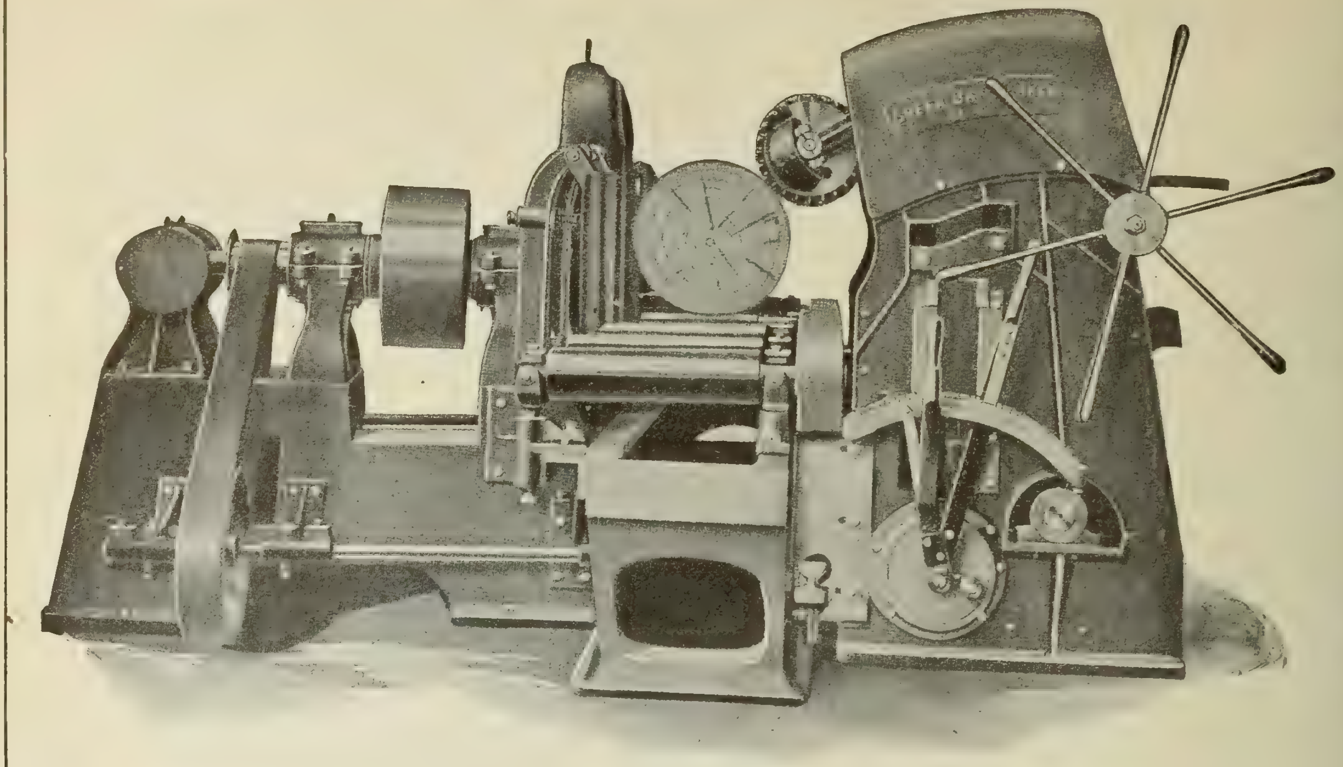

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Whyte, W.

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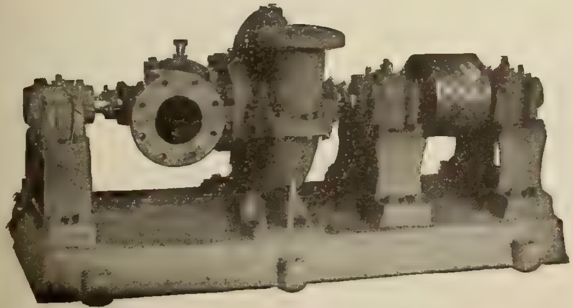

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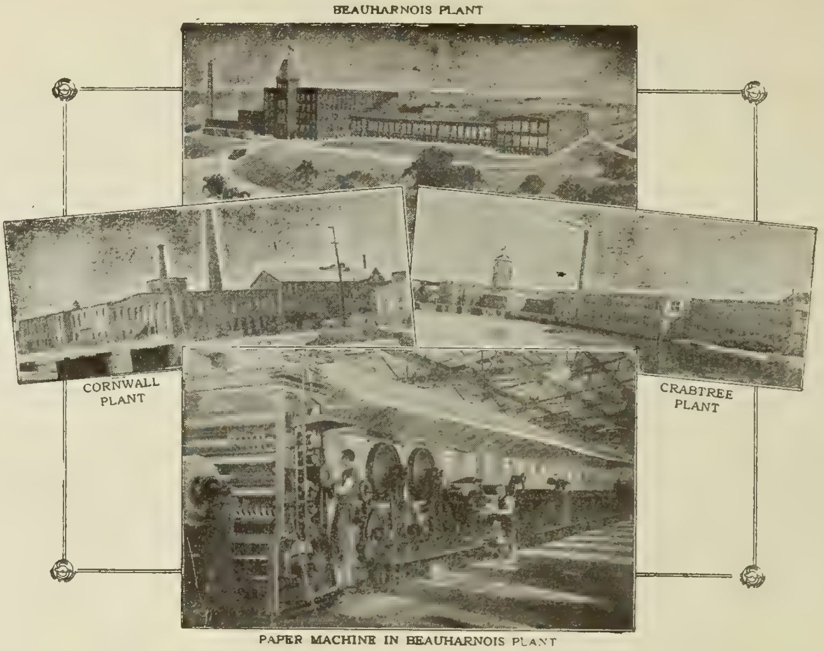

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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-:- EDITORIAL -:-

Almighty God, who hast given unto us a glorious heritage in the lofty mountains, the mighty rivers, the vast prairies and the magnificient forests in this wonderful Dominion, we have been unmindful of this trust. We have been especially careless with regard to the great forests which thou hast given us to use and enjoy. We have wantonly wasted this inheritance with the axe and destroyed it with fire. Through our carelessness, Nature's patient work of a century and the result of man's effort in building houses and cities have been destroyed, even the precious lives of thy children have been cut off by a horrible death and many have suffered terrible agony.

Visit with thy vengence on these Murderers, O God, and punish these desecratros of the homes of thy people, but give freely of thy mercy and comfort to those who have been thus afflicted; strengthen the hands of those who give them aid.

Help us, we pray, to have more reverence for thy holy works. As thou gavest the Promised Land to Abraham and his seed, so hast thou given to our fathers, to us and to our children, this fair country. Help us to preserve the joy of outdoors in the healing atmosphere of the trees, and to protect from harm the material thou hast given us for shelter, fuel and industry. Give wisdom to the legislators who will frame laws for the protection of our forests and grant courage and strength to the officers of administration. And especially, we pray thee, teach us all to appreciate thy goodness and to be careful of the welfare and rights of our fellows. May the lesson of the awful catastrophe of the past week be written indelibly on the heart of every Canadian, with the firm resolve that forest fires from human carelessness and indifference must cease.

PERMANENT GOVERNMENT JOBS

In Great Britain, the civil service is coming in for a good deal of criticism just now. The British taxpayer is groaning under a burden of taxation of which we in this country, in our more fortunate circumstances, have but little conception. Hence he is in a mood in which "retrenchment and reform" in his country's civil service appear to him in the light not so much of dim and distant ideals as of concrete objects that he is determined to attain. And he is asking, in tones of which the Government is constrained to take notice, why civil servants should have such easy hours of work—why they should come so late to their offices and make up for their tardiness by leaving so early —why their holidays should be so prolonged and their toil so little laborious, and why, in short to use the language of metaphor, their beds should be of roses while those of their compatriots are mostly of rocks.

Yet, in Great Britain, the civil service is, in comparison with the civil service of other countries, not an inefficient one. In education, in ability, in industry and in integrity, its members are not inferior to the civil servants of other lands. But the plain fact is that, among civil servants as a body, there is a marked tendency to take life altogether more easily than it should be taken by business men in a world of busy men. Only last May, Mr. F. N. McCrea, M.P., severely criticized the members of our own civil service on the ground that hard work (to put it mildly) is not universal among them. In fact, he described fifty per cent. of them as being parasites—a description which, we would fain hope, is not to be taken quite literally.

But, in all seriousness, why is it that, in practically all countries, Government departments, speaking by and large, seem to tend to slowness, extravagance and incompetence? The employees in such departments cannot all be—indeed, it is notorious that they are not—of an inferior type to employees of private business firms. Yet ability and energy, when seated on a Government stool, have a fearful and wonderful way, in all too many cases, of becoming transformed into ineptitude and lethargy. Why should these things be? It would seem that there must be certain fundamental reasons for a transformation so startling—and, as a matter of fact, there are. Let us briefly consider them here.

In the first place, the fear of being fired which, among employees, is the beginning of wisdom, is absent in the case of the civil servant. Only let him conduct himself satisfactorily as regards deportment and so forth, and he can hold his job until the Greek Kalends. Incompetence, save possibly of the grossest kind, is not a ground for discharge.

Secondly, in most Government departments, it is not service but mechanical routine that has pride of place. Red tape and pigeon-holes are used for people as well as for papers. The atmosphere means a deadening of enthusiasm. And loss of efficiency in work follows loss of enthusiasm for work as surely as the night follows the day.

Thirdly, a civil servant does not get paid by results. The procrastinating and unprofitable employee gets no less in cash than he would if he were prompt and profitable. He can always "get by". And this very fact puts a premium on incompetence and slothfulness.

In the fourth place, the civil servant is in the pay of an employer which has no competitors, which does not need to show a profit, and which is not dependent upon its customers. A Government department is nearly always a monopoly and hence has no competitors to struggle with. It may, perhaps, be said that an apparent exception is to be found in the Canadian National Railways which, in a sense compete against the C. P. R. But that competition cannot be on a real, hard, matter-of-fact, business basis, so long as the former have the purse of Fortunatus to draw on—or, in other words, the taxpayer to milk. A Government department does not need to show a profit. In the case of a private commercial firm, the showing a profit is a prime and primary condition of its continuance in business. For otherwise bankruptcy supervenes. But a Government department has no dread of liquidation. If it pays, well and good. If it doesn't—well, the Treasury can. As regards its independence of customers, this follows from the fact that a Government department is nearly always a monopoly, and it frequently results in an attitude on the part of the civil servants towards the public which a private firm would not tolerate in its employees.

Such are some of the factors that make for inefficiency in civil servants as a class and for perfunctoriness in their work. It is the system that is responsible for these things and not the men who are the cogs in the wheel of the system. And it is difficult to see how these faults are to be remedied. They seem to be inherent in the civil service systems of practically all countries—and we cannot do without civil servants. But, at least, we can avoid adding largely to their number. Add largely to their number we shall if the National Railways come under Government control in such a way as to become, to all intents and purposes, a Government department.

As we have said, the fact that officials in Government departments are so generally less efficient than employees of private firms is the fault of the system and not of the men, as a general rule. There are even some Canadian civil servants of such marked ability and energy that they have been proof against the deadening and enervating influences of the system—and we could name some outstanding figures of whom this can be said. But, in the main, the tendency of the system, here as in other lands, has been to turn the able man into a clerical drudge, the man of initiative into a mere mechanical hack.

The Technical Association of the Pulp and Paper Industry had a fine meeting in Detroit. The eyes of the industry are now turned toward Chicago for the Fall business meeting of the A. P. and P. A. in Chicago, Oct. 16-20.

As evidence of the increasing appreciation of the value of home-grown timber, Tasmania is going in for afforestation to provide for future needs.

The Manufacture of Blotting Paper and Parchment Stock

(Translated specially for *Pulp and Paper Magazine* from *La Papeterie,* xliv, 98-101, 146-154, 393-400, Feb. 10 and 25, May 10, 1922, by A. Papineau-Couture.)

The main qualities required of a good blotting paper are high absorption and sufficient wearing qualities under service conditions. In practice the quality of a blotting paper is satisfactory when it can absorb heavy ink lines without smudging; and of course it is necessary that it should be able to do so repeatedly, as otherwise a blotter which had been used once would naturally make blots. Moreover, it must be strong enough not to tear when used. Very frequently the most absorbent blotters are the least strong: before the war some of the German and Austrian blotting papers were extraordinarily absorbent, but they were of such flimsy texture that it was practically impossible to use them. A certain amount of flexibility is also demanded; but this is more a matter of fashion than of quality, as the suppleness has no direct bearing on either the absorbency or the wearing qualities. However, the paper maker must satisfy the wishes of his customers, such as they are. The surface of the sheet should be even and the grain not too pronounced. It should be matt, and, above all things, uncalendered, as calendering greatly diminishes the absorbency.

In routine testing very frequently the only determination is that of the height of absorption; and the quality of the paper is judged entirely by the results of this test. The method is too well known to require description, and we shall merely draw the reader's attention to a few points in connection with the test. In order to obtain comparable results it is absolutely necessary to use distilled water and to work always at the same temperature. The height of absorption increases with the temperature, at least between the limits within which we have worked, namely, 10 deg. and 50 deg. C. As to the influence of the purity of the water on the results obtained, the following tests will show it very clearly.

Test No. 1—Distilled water.

Test No. 2—Ordinary tap water having a hardness of 20 deg.

Test No. 3—Distilled water containing 1 cc. of normal sulphuric acid in 200 cc.

Test No. 4—Distilled water containing 1 cc. of normal hydrochloric acid in 200 cc.

Test No. 5—Distilled water containing 1 cc. of normal sodium hydroxide.

Test No. 6—Distilled water containing 0.5 cc. of saturated solution of sulphate of alumina.

The tests were carried out on a pure cotton blotting, free from loading, and weighing 235 g. per square meter. In a second series of tests 10 cc. of the same reagents were added to the water.

Test	First Series			Second Series			Reagent
No.	Max.	Min.	Av.	Max.	Min.	Av.	
1	69	64	66.5				Distilled water
2	65	57	61				Tap water
3	65	60	62.5	45	40	42.5	Sulphuric Acid
4	65	60	62.5	55	44	49.5	Hydrochloric Acid
5	68	66	67	50	43	46.5	Caustic Soda
6	68	60	64	45	40	42.5	Sulphate of Alumina

The above figures show the height of absorption in mm. after 10 minutes. One of the most striking results is the great difference in absorbency in the machine and cross directions in most instances. This is due to capillarity. As the fibers place themselves mostly parallel to the machine direction, the liquid rises more easily along the fibers, and even inside them.

If, now, we examine the above results, we note that in every case but one the addition of various substances decreased the height of absorption, the decrease becoming greater as the amount of reagent was increased.

Ordinary water gave a decrease of 8.3 per cent;

Sulphuric acid a decrease of 6 per cent. in the first case and 36 per cent. in the second;

Hydrochloric acid, decreases of 6 per cent. and 25 per cent. respectively;

Caustic, a slight increase in the first set, but a decrease of 30 per cent. in the second;

Sulphate of alumina, decreases of 3.7 per cent. and 36 per cent.

The result obtained with a slight addition of caustic is remarkable, the height of absorption actually increasing. This we attribute to a precipitation of soluble salts which were left in the paper by the water used in its manufacture.

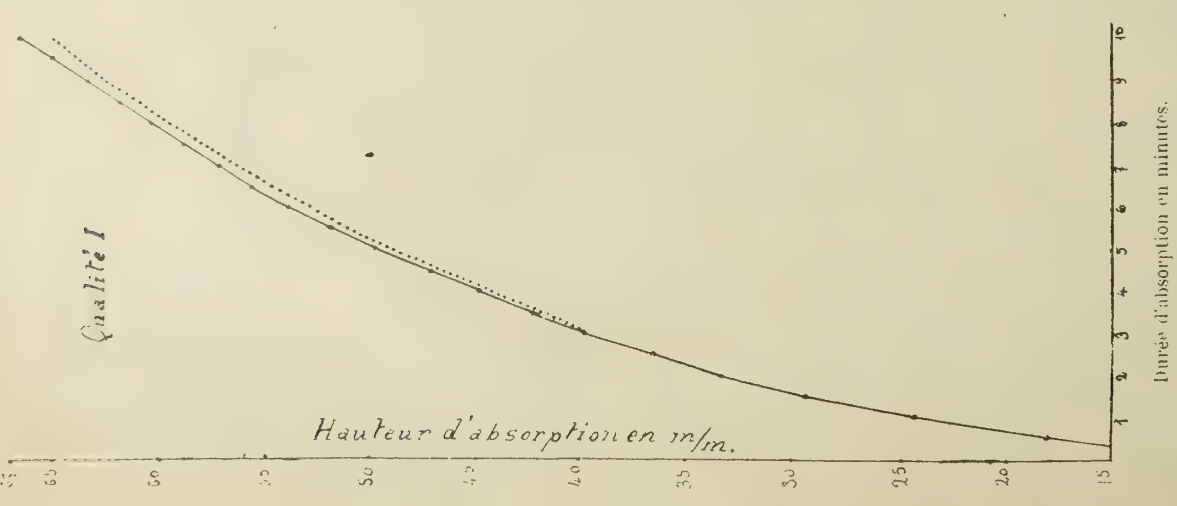
It follows from these results that the water used in the manufacture of blotting paper should be as free as possible from dissolved substances. When we consider the enormous quantities of water which come in contact with the fibers it is easily understood why many mills that do not possess a water supply of suitable quality are unable to make blotting paper of high absorbency. It is true that the dissolved salts can be precipitated out of the water; but this is not only costly but also dangerous, as very frequently the salts precipitated out are merely replaced by another one.

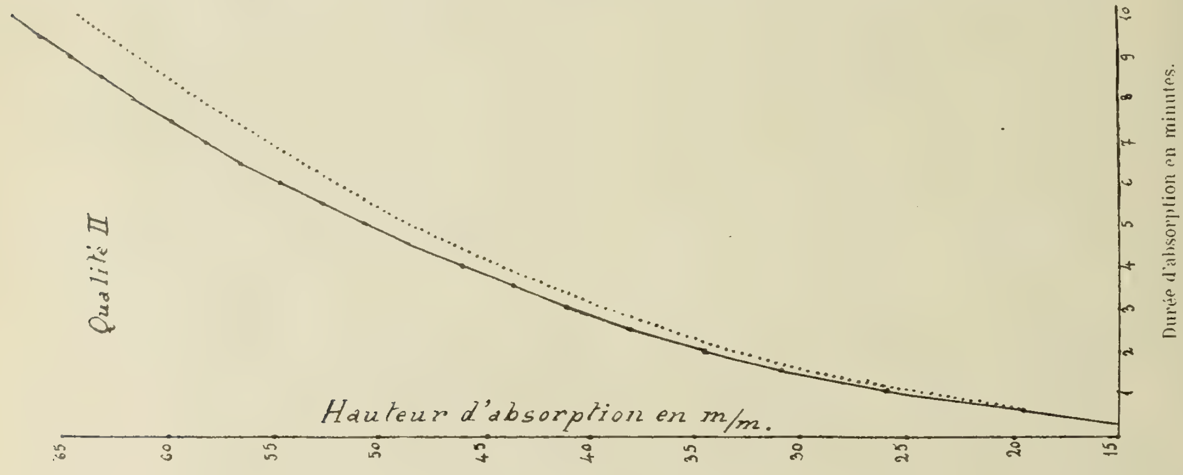
A height of absorption of 60 to 65 mm. is generally considered sufficient. But it does not follow that such a paper will be of good quality nor that it will not smudge when used. The following test is very convincing: two sheets of the same blotting, one of which is calendered and the other not, will have practically the same height of absorption; but the uncalendered sheet will readily absorb ink, while the other one will hardly do so at all. This may seem self-evident; but it gives a very valuable indication, namely, that everything should tend to the production of as porous a paper as possible. We shall see further on how this can be obtained.

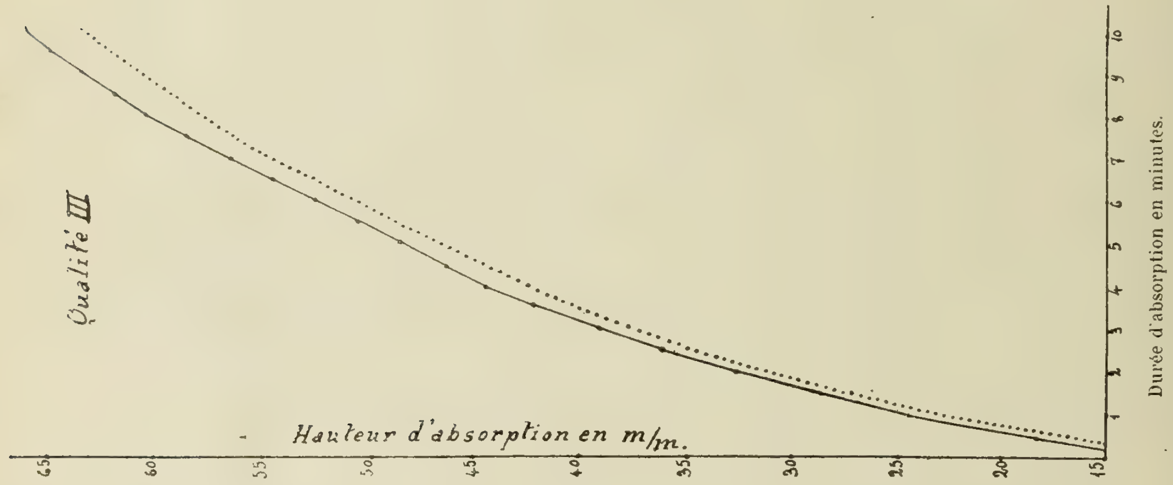
If a drop of ink is allowed to fall and to dry on a blotter, it will be seen that the center of the spot still possesses a certain absorbency, and that it is surrounded by a ring which has lost practically all absorbency. This prenomenon has been taken as the basis of a method of testing which is not much used, but which seems to be more practical than the usual method.

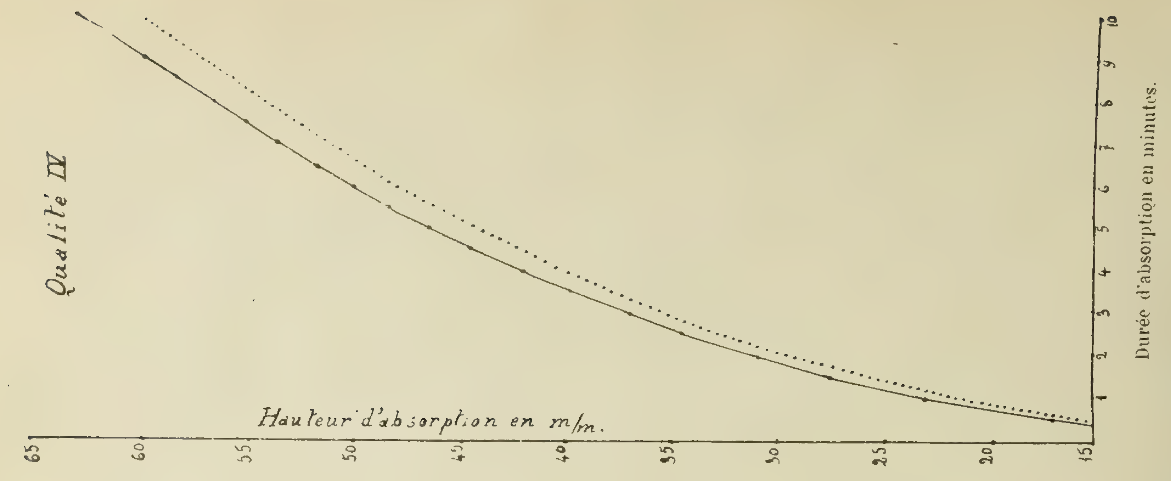
The following experiment is quite interesting. After determining the height of absorption in the usual manner, dry the test strips at 100 deg. C., leave them exposed to an atmosphere of normal humidity for 24 hours, and repeat the absorbency test. The height of absorption will have decreased considerably. Repeat the test a third and fourth time. Generally, a paper which gave a height of 65 mm. on the first test does not give more than 15 to 20 mm. on the fourth.

I consider that such repeated tests have a great practical value, and that the height of absorption found on, say, the fifth test shows up the quality of the paper much better than the usual method of testing. Evidently in the case of repeated tests it is of still greater importance to use distilled water, as otherwise the height of absorption very quickly becomes nearly zero. The time of testing could also be increased to advantage, the height being measured after 15 or 20 minutes instead of 10 as is done at present.









Note: Durée d'absorption en minutes = Time of obsorption in minutes. Hauteur d'absortion en m/m = Height of absortion ni millimeters.

When measuring the height of absorption, it is seen that the water rises very rapidly at first, and then more and more slowly. In a series of tests I made observations at 30 second intervals and have tabulated the results below.

HEIGHT OF ABSORPTION

Time in	Grade I		Grade II		Grade III		Grade IV	
min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
0.5	18	18	19.5	18.5	17.75	16.5	17	15
1	24.5	24.25	25.75	24.5	24.5	22.75	23	21.5
1.5	29.25	28.75	30.75	29.5	28.5	27.25	27.5	25.5
2	33.25	33	34.5	33.25	32.75	31	31	29.25
2.5	36.25	36.25	38	36.5	36	34.5	34.5	32.5
3	39.75	39.5	41	39.25	29	37.25	37	35.25
3.5	42.25	42	43.5	41.75	42	40	39.75	37.5
4	44.75	44.5	46	44.25	44.5	42.25	41.75	40
4.5	47	46.75	48.5	46.5	46.25	44.25	44.5	42
5	49.75	49	50.5	48.5	48.5	46.25	46.5	44
5.5	51.75	51	52.5	50.25	50.5	48.25	48.5	46
6	53.75	52.75	54.5	52	52.5	50.25	50	48
6.5	55.5	54.75	56.5	53.5	54.5	52.25	51.75	49.5
7	57	56.25	58	55.25	56.5	54.25	53.75	51
7.5	58.75	57.75	59.75	56.75	58.5	56.25	55.25	52.75
8	60.25	59.5	61.5	58.5	60.5	57.75	56.75	54.25
8.5	61.75	61	63	59.75	62	59.75	58.5	56.75
9	63.25	62.5	64.5	61.5	63.5	60.75	60	57.25
9.5	65	63.75	66	62.75	65	62.25	61.5	58.75
10	66.5	65	67.25	64.25	66.25	63.5	63.25	60.25

Grade I was an all rag paper, loaded with blanc fixe, and having an ash content of 18 per cent.

Grade II was an all rag paper free from loading.

Grades III and IV were made from 50 per cent rags and 50 per cent. poplar pulp. They gave 18 per cent. and 22 per cent. of ash respectively, the filler consisting of a mixture of blanc fixe and china clay.

The results given in the table are shown graphically in the figures, the heights of absorption being taken as ordinates and the times as abscissas. The full line curves are for the maximum values and the dotted lines for the minimums. In the case of Sample I the two curves separate only at the end of the third minute, but this is merely accidental.

Raw Materials Used in the Manufacture of Blotting

The ideal raw material is well worn cotton rags, free from size. It is the only material which is free from incrusting or resinous matter, which would get into the pores of the paper and decrease the absorbency. Moreover, rag pulp has little tendency to hydrate in the beater, and the treatment to which it is subjected can be varied within wide limits without affecting the essential qualities of the stock.

Flax and hemp rags should never be used, even when they are well worn. They are used only for the manufacture of vegetable parchment stock. They always give pulps which hydrate easily and which are not as absorbent as cotton pulp.

Jute gives good results; but it is extremely difficult to get a very white pulp, and the paper is always rough to the touch. A satisfactory white can be obtained by a special treatment, and the paper prepared from this pulp is exceptionally tough, and at the same time it is flexible and absorbent.

Chemical pulps also give very good blotting, but they must be well bleached and soft. Unbleached pulps contain too much incrusting matter and hydrate too readily. Soda pulps, and especially soda poplar, give very good results; but unfortunately the poplar fibers are very short and the blotting paper made from it is not very strong. The absorbency, however, is practically the same as that of an all rag paper. In the manufacture of very thin vegetable parchment stock, (water-leaf) as much as 80 to 90 per cent. of cellulose is used. Pulps containing resin should be very carefully avoided. The superiority of soda pulps over sulphite for the manufacture of blotting paper resides in their freeness from resin and in their softness. Needless to say that the use of mechanical pulp is out of the question.

Every step in the process of manufacture must tend to give the finished product the desired qualities, which, as we have seen, are softness, porosity, and absorbency. Special care must be taken at the very beginning, which is the sorting of the rags. The main rule which should be observed in the case under consideration is to sort the rags according to their softness, and this should be attended to more particularly in the preparation of stock for the manufacture of vegetable parchment. Linen rags, and all new or insufficiently worn rags, should be eliminated. For if the raw materials are not properly chosen no amount of subsequent handling or manipulation can give a high grade product. In the manufacture of the better qualities it is necessary to remove the seams. The most serious drawback to the use of cotton rags is the presence of rubber; some of it gets by the most experienced sorters, and it is present in the most carefully sorted grades. It resists the action of the cooking liquors, is torn up in the defibering engine, and relatively large pieces manage to get through even the finest screens and make very ugly spots in the paper.

Of course mechanical rag cutters are generally used; but in order to get the highest grade pulp hand-cutting must be resorted to, as it is the only way of forcing the sorters to take each rag separately and remove all undesirable portions. After cutting the rags are carefully dusted.

Boiling may be carried out with lime, or preferably with a mixture of lime and caustic. It must not be forgotten that the purpose of boiling in this case is *not* to remove incrusting matter while preserving the strength of the fibers unimpaired. All incrustants must be removed; but there is no objection to attacking the fibers, which must be softened, swollen, and rendered absorbent. Provided the yield is not unduly decreased, (nor fibres mercerized) the boiling may be made very severe: high concentration of the liquor, high pressure, long boiling.

For white rags caustic is sufficient; but for colored a mixture of caustic and lime should be used to obtain good results, as caustic alone does not sufficiently destroy the darker colors. A mixture of lime and soda ash is also sometimes used; but I do not consider this advisable in the manufacture of blotting paper. It is true that a mixture of lime and soda ash gives caustic and lime, but calcium carbonate is also formed. This has a twofold drawback: part of the lime is rendered useless, and the carbonate formed adheres to the fibers and is not readily removed by subsequent treatments. The fibers become harsh and less absorbent. Soda ash cannot be used alone as its action is not sufficiently energetic.

With jute, lime alone should be used. Two, and sometimes three, boilings are required, each of which is followed by thorough washing. Jute which has been boiled three times yields a fairly white pulp which can be used to the extent of 30 to 40 per cent. in blotting paper furnish. It is true that the treatment of jute is expensive, and that the yield of bleached pulp is only about 40 per cent; but the raw material is so cheap that when everything is taken into consideration jute pulp is cheaper than cotton pulp.

Fermentation

Before leaving the subject of rag boiling, we wish to say a word of the fermentation of rags. This process is said to have been abandoned, but all the same it is still used on a large scale, and it must absolutely be used in order to obtain a very absorbent paper. The process is expensive and disagreeable and it causes a large loss of fiber; but so far no process has been devised which will give as good results in the manufacture of blotting papers. Prolonged boiling at a high pressure with an excess of caustic also gives satisfactory results as far as absorbency goes, but the shrinkage is even greater, and the fibers have not the same softness and strength.

The more energetic fermentation is that which is carried out before boiling. The cut rags are piled in layers 25 to 30 cm. (10 to 12 inches) thick, and sprinkled with water as evenly as possible. After two or three days fermentation sets in, as shown by a considerable rise in temperature of the mass, and care must be taken to avoid spontaneous combustion. Fermentation is then allowed to proceed for four or five days. The charging of the boiler is particularly painful and difficult, as the odor of the rotten rags is absolutely repulsive. The top layer must not be used as fermentation occurs only inside the mass.

Another fermentation process, which is less energetic and easier to carry out, consists in letting the boiled rags stand in a heap in a wet condition for about a week before washing and defibering.

Soft chemical pulps, and more particularly those prepared from deciduous woods (aspen and poplar), can be used just as they are prepared by the pulp mills. But in order to obtain very soft and highly absorbent blotting papers they should be subjected to a fresh treatment with caustic, which will attack the fibers and at the same time remove the last traces of incrustants. In this way blotting paper can be obtained which, though it contains no rags at all, is as soft and absorbent as pure cotton blotting. With a sulphite pulp of medium hardness, this process yields papers having a height of absorption of 80 to 90 mm. Of course, boiling chemical pulps in this way is an expensive proposition; but in many cases it is still cheaper than the use of rags. Many paper makers are apt to overlook the fact that the yield of bleached rag pulp is only 40 to 70 per cent. of the rags charged into the boilers, and all too frequently much of the upkeep, fuel, overhead, etc., which should be charged up to rag treatment is charged up to some other lines which do not contain any rags at all.

After boiling the rags must be washed. The best way is to do this in the boiler itself, after draining off the liquor. It should first be done with hot water, as many of the substances dissolved by the hot liquor would be precipitated on the fibers by the addition of cold water and could not be removed by subsequent washing. In a properly planned mill all the hot water required should be available without any additional consumption of fuel. When the hot wash water comes through quite clear, cold water may be used and the washing is continued in the defibering engine. Not only does careful washing result in a considerable reduction in bleach consumption; but it is essential to the production of a very white pulp.

The defibering requires no special precautions, except that hydration should be prevented as far as possible. The defibering should be carried out thoroughly, but rapidly, and the consistency should not be too high.

Bleaching is usually carried out by means of bleaching powder, but electrolytic bleach or sodium hypochlorite is preferable as the incrustants are more completely eliminated. Bleaching with permanganate is perhaps more energetic in the case of highly colored rags, but it is expensive. The most economical method would be to use bleaching powder solutions saturated with chlorine gas.

After bleaching all products of chlorination must be carefully eliminated by a thorough washing, and, contrary to common practice, the bleached pulp should not be acidified before sending to the draining chests. An addition of caustic would be much better.

It may not be amiss to say a word about the preparation of colored fibers for obtaining granite effects, as this is generally done after bleaching. Cotton, jute, or chemical pulp can be used for the purpose, jute being particularly suitable on account of the length and stiffness of the fibers. Detailed directions for use are given in the catalogs of all dye manufacturers, and by following these good results are easily obtained.

Red is most frequently used in the preparation of mottled blotting. The simplest method is to color cotton pulp by means of Congo red. If care is taken to fix the color properly on the fibers and to wash them thoroughly there is no danger of the color running.

Another method consists in sorting out rags of the desired color and in defibering them without boiling them. This is used especially for blue mottling, but cannot be used when bright colors are required.

Treatment in the Beater

The composition of true blotting papers (as distinguished from vegetable parchment stock) is quite variable: it will be all rag and free from fillers for the highest grades (or what is considered as such in the specifications of practically all public administrations); while it may be almost anything in the case of the grades sold to the general public. Very satisfactory blotting can be found containing 60 per cent. and more of poplar or other soda pulp and 20 per cent. or more of ash.

It is advisable to use only ground barium sulphate (heavy spar) as filler. China clay, talc and precipitated barium sulphate are not as suitable, not only because the retention is not as high, but also because they have an adverse effect on the absorbency. China clay should be especially avoided, as it forms a sort of colloidal solution which clogs the pores of the paper and acts as a regular size. The following experiment convinced us of the advantage of using ground barium sulphate.

During the course of manufacture, without changing any of the other conditions of working, the nature of the filler was changed. The pulp consisted of 40 per cent. cotton, 50 per cent. poplar, and 10 per cent. blotting trimmings. To each beaterful was added 50 kilos of china clay, and the finished paper gave an ash of 10 per cent. and a height of absorption of 66 mm. in 10 minutes. In four consecutive beaters 25 kilos of china clay were replaced by 25 kilos of ground barium sulphate. In order to prevent interference with the paper machine, the beaters were dumped into the machine chest just as if no change had been made, each beater being dumped when there remainded only two beaterfuls in the chest. Hence, after dumping the first beater the chest contained two beaters with the old filler and one with the new, so that the composition of the filler corresponded to about 42 kilos of china clay and 8 of barium sulphate per beater. After dumping the second beater it became 36 clay to 14 barium sulphate, after the third it was 32 to 18 and after the fourth 30 to 20.

Very carefully made tests showed that the height of absorption increased with the proportion of barium sulphate, being 68, 70, 71 and 72 mm. respectively. The ash rose to 12 per cent. and then to 14 per cent., and the amount of stock fed to the machine had to be cut down to keep the proper weight per square meter.

The experiment was pushed further by replacing the china clay entirely by barium sulphate in the four succeeding beaters. The height of absorption then rose to 76 mm. and the ash content to 16 per cent. The use of barium sulphate instead of china clay had the twofold advantage of improving the quality of the finished product and of cutting down the cost of production.

It is well known that by using barium sulphate alone papers can be made having a very high ash content. Unfortunately, the specific gravity of barium sulphate is about twice that of the other fillers used; so that a paper with 25 per cent. ash which is loaded entirely with barium sulphate will be much more transparent and less bulky than one loaded with talc or china clay. But an equally high retention can be obtained by using a mixture of barium sulphate with either talc or clay. With the latter alone, special precautions are required to get an ash content of 25 per cent to 30 per cent, with a mixture of 20 per cent. barium sulphate and 80 per cent. talc or clay this can easily be attained, and as the fillers are retained in practically the same proportions as they are added in the beater there is no falling off in bulk or opacity. Barium sulphate seems to have a regular precipitating action on the material held in suspension in white water, as may very easily be seen by those using Antoine or Fullner save-alls. It is often sufficient to replace about 5 to 10 kilos of the clay by an equal amount of barium sulphate to make the overflow from the save-all perfectly clear. We have tried this time and again, and it has never failed to work.

Certain precautions are required in coloring. Only such dyes should be used as are fixed by the fiber without the use of mordants, which would interfere with the absorbency. Contrary to what is done to advantage in the case of sized papers, dyes which mutually precipitate each other must be carefully avoided; for the gelatinous precipitate so formed acts as a size and clogs the pores of the paper. The use of Congo red, Prussian blue, and ocher is very economical, and mixtures of these three colors can meet most requirements, provided bright colors are not asked for. For granite effects, the colored fibers are added to the beater just a few minutes before dumping.

The beaters should be furnished as rapidly as possible. Of course, bought pulp should not be put in the beater in laps, but should first be pulped in an apparatus such as the Lannoye pulper which does not hydrate it. The consistency should be kept down; and the heavier the paper the lower should the consistency be. For instance, for a paper weighing 60 grams per square meter a consistency of 5.5 per cent. is satisfactory, while for 100 gram and 170 gram papers 5.0 per cent and 3.0 per cent. consistencies, respectively, give good results. A slight increase in the consistency immediately causes hydration of the stock with a corresponding falling off in the absorbency of the paper.

The time of beating should be reduced to a minimum. Theoretically the stuff is ready for the machine when it contains no knots or bundles of fibers and when it has been sufficiently shortened. Unfortunately, blotting paper is not usually made on machines built specially for the purpose as they are used for the manufacture of other grades, so that a certain amount of hydration is required in order that the stock may work properly on the machine. Of course this means a sacrifice of quality, and it shows that it is ridiculous to try to make all papers equally well on the same machine. No hard and fast rules can be laid as to the time of beating, but for the heavier grades of blotting it should not exceed 15 to 20 minutes. The roll should be right down on the bedplate, except in the case of thin vegetable parchment stock which requires relatively long and coarse fibers. Emphasis should be laid on the word "relatively". The pulp for a blotting paper weighing 40 or 50 grams is slow compared with that of a heavier paper, but it will be very free compared with that for vegetable parchment stock of the same weight.

As to the kind of beater which should be used, from what we have said it is obvious that modern types of beaters are absolutely unnecessary. All improvements which have recently been made in the design of beaters tend to hasten circulation and hydration and to allow of the use of greater consistencies. In the present case we have a low consistency and there is no trouble in getting a proper circulation. It is therefore sufficient to use a beater free from dead spots where the stock might collect and which would require the use of some sort of stirrer.

The bedplate knives should not be more than 3 mm. thick, and the fly bars about 6 to 8 mm. thick. They should be of steel, and very sharp. Bronze tackle is not suitable as it becomes dull and wears out too quickly.

We have already said that it may be advantageous to make the stock slightly alkaline. This is done when dumping the beaters into the machine chest by adding about 1 to 1.5 kilos of soda ash or of caustic per 100 kilos of dry stock.

Handling of the Paper Machine

We now come to the handling of the paper machine.

The stock is very free and must be made to yield a paper with maximum softess and porosity which will generally be fairly heavy, so that we can say offhand that no great difficulty need be expected at thtis stage in the manufacture. Care must be taken, however, not to destroy the properties given to the pulp by its previous treatment and to develop these desirable qualities to the greatest extetnt possible.

As the consistency of the stock in the beaters is already low, too much additional water must be avoided when sending it to the machine chest. If there is an excess of water, the paper will be streaky, especially near the edges. Moreover, the more water is added the greater the amount of soluble salts which come in contact with the fibers and the more is the absorbency reduced. The shake should not be too rapid, but rather long and slow. When necessary to obtain a proper finish, a dandy can be used; but it is preferable, especially with heavy blotting paper, to do without it, as it always compresses the sheet to a greater or less extent and diminishes the porosity. Transparency and formation, which are of great importance with other grades of paper, are of very minor importance in this case. Frequently watermarked blotting paper is required, and then a dandy must evidently be used. Very good blotting paper can be made even when a dandy is used; but its use very easily causes a falling off in the quality of the paper. Draining of the water through the wire and by the action of the table rolls occurs very readily, and there is no trouble at the suction boxes.

The back water contains considerable amounts of fine fibers and of loading materials. The question arises as to whether it should be used over again, either as such or after concentration. Looking at the question from the standpoint of cost of production, there is only one thing to do, for the use of the white water effects a saving of about 10 to 15 per cent. in raw materials. But unfortunately the white water has a most disastrous effect on the absorbency of the paper. The fine fibers and the fine particles of filler clog up the pores rendering the paper much less porous. For the preparation of papers having a height of absorption of 80 to 100 mm. only clear water should be used, and the white water should be made use of in the manufacture of some other grade of paper. If the height of absorption need not exceed 60 to 65 mm. the whole of the white water can be used without fear; and fortunately this degree of absorbency is sufficient in most cases. In the case of vegetable parchment stock, the use of white water may present serious drawbacks, and every case should be judged on its merits.

The save-alls used for white water from the manufacture of blotting paper should be larger and more carefully designed than those used in the manufacture of sized paper. In the latter case the white water always contains a certain amount of sulphate of alumina which aids decantation; while in the case of blotting paper the water is generally alkaline and decantation is difficult, so that circulation must be very slow, especially when making blotting free from fillers. With the ordinary types of save-alls perfect decantation can be obtained only by adding some barium sulphate to the filler. As we have already shown, this is the best filler to use in blotting paper. In the case of unloaded blotting (other than vegetable parchment stock) loss of fiber can be avoided by adding about 2 to 3 per cent. of barium sulphate to the stock. In this way the overflow from the save-all will contain a mere trace of fiber; but the ash-content of the paper must be watched to see that it does not exceed the limit set in the specifications.

As the stock is free, the suction boxes work well, and no difficulty is experienced at the couch. Heavy pressure can be applied without fear of crushing or of seeing the paper stick to the roll. The jacket easily becomes dirty, however, and should be freely washed and dried as much as possible either by means of a doctor or of a rubber roll. The latter is perhaps more difficult to use with blotting than with other grades.

The only real trouble experienced on the machine is at the presses. With upper press rolls of iron or bronze, it is extremely difficult to prevent the sheet from sticking. After trying all other methods of overcoming the difficulty, it is sometimes necessary to make the stock a little wet, thus partially destroying the results of the very careful selection and treatment of the materials. This certainly is most illogical! But then, why insist on making blotting on a machine designed for an entirely different grade of paper?

The use of stone for the upper press rolls and of a small suction box under the felt just in front of the nip of the press help things along considerably, and if the pressure is just sufficient to make the upper roll turn fairly satisfactory results can be obtained. But a minute's thought is sufficient to show that presssing between a felt and a hard smooth surface (such as iron, bronze, or granite) is hardly a suitable method of treating paper which must be spongy and porous and must have both sides absorbent.

In order to obtain really satisfactory results, the paper should be pressed between two felts. This can be done in two ways: either by fitting the upper press roll with a jacket, or by using an upper felt in the same way as a lower felt is always used. Both methods are in use and both work well. In the case of machines which run regularly on blotting, the first method is preferable, as it is by far the more economical. Of course it is not sufficient to add merely the jacket; the necessary washing appliances should also be used, otherwise the jacket will very soon become dirty and the machine will have to be stopped to clean it. By using an upper felt the necessity of continuous washing is overcome, especially if a 6 or 7 meter felt is used. Under these conditions it will be sufficient to change the felt about once in 24 hours. This method of working is the better one for machines which are run intermittently on blotting: after the run of blotting is finished it can be used for other grades by merely removing the upper felt.

By using an upper jacketed roll or an upper felt, no trouble is experienced in passing the paper through the press, and fairly heavy pressure can be used without crushing the sheet. Moreover, there is a surprising difference in the softness and absorbency of two papers made from the same materials and in the same manner, except that one has been pressed as described above and the other in a bare press.

Modern paper machines are generally equipped with three presses at the last of which the paper is reversed. This arrangement is not suitable for the manufacture of blotting paper for the following reasons: the trouble experienced with the sheet sticking to the upper roll of the first press will occur to a somewhat less extent at the second and third presses; and the use of bare second and third presses is just as detrimental to the quality as the use of a bare first press. Of course the machine must be used as it is, and the best should be made of it by pressing as lightly as possible. The sheet could, however, be led directly from the first press to the dryers by means of a felt. Machines which run entirely on fairly heavy blotting paper should have only one press, additional presses making the manufacture more expensive and more difficult and at the same time impairing the quality of the product. For light blotters, and more particularly for light vegetable parchment stock, the ordinary machine can be used provided the pressure is not too high.

The drying of blotting paper offers no special difficulties. In order to increase the porosity, it is advisable to have the web quite wet when it reaches the dryers. Drying can be carried out at a high temperature and may be quite sudden. There is no danger of cockling or of destroying the size. One point only need be watched: if the temperature of the first dryers is too high, they will become dirty, the sheet will fuzz, and there is apt to be a difference in shade between the two sides of the paper. As the rate of evaporation is very high, the felts should not cover the dryers any more than is absolutely necessary. A large battery of dryers, necessitating a slow and progressive drying is a drawback rather than an advantage. The battery should be just large enough to handle the production of the wire; and if it is any larger than this, paradoxical as it may seem, it is better to cut out the last few dryers rather than decrease the drying temperature.

Blotting papers are frequently found, one side of which is covered with sized paper. These blotters can evidently be used on one side only. They are generally made on special machines having two wires.

ABANDON CASE FOR PULPWOOD LOSSES

In the Quebec Superior Court last week in the case of Masse versus the Armstrong Forest Company of the United States, the action, which was for the sum of $238,676.14 was dismissed on the abandonment of the case by the plaintiff.

In the spring of 1920 the Armstrong Forest Company made arrangments withMr. Masse by which the latter would buy for them all the pulpwood that he could find on the market at the current price. Mr. Masse was to kept this wood until the winter when it was to have been delivered to the buyers. These arrangements were made verbally at St. Appollinaire de Lotbiniere and at Johnsonburg in the United States.

It turned out that the price of pulpwood fluctuated and the defendant company refused to take the whole shipment. Mr. Masse immediately took action for the sum mentioned, to reimburse his loss.

The engagement is announced in Vancouver, B. C., of Sally McKee, only daughter of Mr. and Mrs. Norman Lang, of Vancouver, B. C., to Mr. J. M. Nichol, only son of the Lieutenant-Governor of British Columbia and Mrs. W. C. Nichol.

The Discovery of Dextrin

By the Editor of the *Valve World*

Dextrin and dissipation naturally associate themselves in the history of those accidental things that have led to important discoveries. Not that John o' Barleycorn actually found this very useful adhesive substance, but the man who did discover it was deep in his cups at the time and his convivial habits had much to do with depriving him of reaping any adequate reward as the result of his ingenuity and sharpness. This is the story of the discovery of dextrin, otherwise known as British gum, Alsace gum, gommelin, and leiocome:

In the year 1821 his majesty George IV of England made what was termed a "royal progress" through Ireland. The whole island was in a state of holiday, and as the king had distributed his largesse with a free hand there was much merry-making, particularly among the less affluent classes who did not often get a chance to drink the king's health with the king's money.

On the 5th of September of that year King George embarked for England at the harbor of Dunleary. There were many manifestations of loyalty, doubtless due in great part to the king's liberality. The local authorities honored the occasion by changing the name of the port and town to Kingstown, and the volatile citizens of Dublin grew more light-hearted as well as light-headed, owing to the quantities of the potent national beverage which they consumed.

How a Fire Led the Way

That evening, when the merry-making was at its height and the streets of Dublin resembled New Orleans during the Mardi Gras, there was a sudden cry of fire. A starch factory near Chapelizod was in flames.

Among those who thronged from the streets of Dublin to the little village, clearly marked in the distance by the reddened sky, was a certain journeyman calico-printer who had honored his king and country by reducing the stock back of the tavern bars. He was roisterously, gloriously drunk, so there is not even a suspicion that he was thinking of acquiring sudden fame as he swayed through the crowds in front of the burning building and grasped the handle of one of the primitive fire pumps.

The water thrown on the flames washed the starch from the building, and soon our calico-printer was standing ankle deep in what seemed to be a very good quality of dairy cream. When he grew tired of his volunteer work and longed for one more drop of the "cratur," he turned from the pumps, got tangled with five of his companions, and together they rolled in the starch and water, laughing, spluttering, and finally gaining their feet arm in arm. And thus linked they started back for Dublin filling the night air with snatches of song and sallies of wit.

Six Men Glued Together

Then a strange thing occurred, which only tended to heighten the merriment. The six men were glued together so fast that they had to enter the tavern edgewise, still locked elbow to elbow. As a triple Siamese twin they drank their "good nights" and "tipped" the landlord to soak them apart with warm water.

Next morning the calico-printer awoke with anything but a clear head, and began to dress himself. But he could not get into his clothes. Every opening was closed. His garments were stuck together in every part as though they had been dipped in glue. By dint of much wetting and not a little cutting he at last managed to cover himself, and then started out to find his five companions of the night before. He could not understand why simple starch and water should have played him such a scurvy trick. He found his fellows in a similar predicament. Together they visited the scene of the fire, and to their surprise found the roadway dotted with sticky puddles.

A calico-printers they knew full well the value of gum arabic, used in sizing the calico and carrying the colors. They wondered whether this unquestionably much cheaper "gum" would not answer the same purpose. They took some of it from the puddles and tried it in their trade with most gratifying results.

Now the question arose, How to secure a supply of the "gum"? They began experimenting with starch, water, and fire, the three elements that seemed to have produced the first sample. They found that starch, heated to a certain temperature lost its ordinary properties and became a yellowish brown substance, sweet to the taste, readily reduced to powder and very adhesive. They had found the secret of making what was first called "British gum," but what is now most generally known as "dextrin."

Rum Bars the Way to Success

Dissipation, however, still played a leading part in the calico-printers' efforts to give their discovery a wider range. Money was scraped together and one of the six was sent to Lancashire for the purpose of opening a market for the new product. He did not make much headway, simply because he seldom was sober when he called upon the capitalists he wished to interest in the merits of the new "gum."

More money was raised, and another of the six was sent to join the first. These found that two could drink more than one and that is about all they did find, for they did no business. At last, losing patience the remaining four journeyed down to Lancashire. The six held a conference. They were right in supposing that they held a secret worth a king's ransom, but they had no idea of business methods and were utterly incapable of developing their discovery. But money they must have, so they decided to sell their secret for a lump sum, and opened negotiations for this purpose. But before the transaction was closed, they had another spree, and as a result one of them fell off a dock and was drowned, and two others were sent to prison for mixing in a riot in Manchester.

The remaining three, now fully persuaded that their secret possessed some fell power, hastened to dispose of it, and with the funds thus obtained they went to New Orleans, where their money was soon spent. Here they were lost sight of quickly and nothing more has been heard of the discoverers of dextrin. Even their names have been forgotten. The man to whom the secret was sold for a few pounds amassed a large fortune out of it before a customer managed to steal his process and thus make it public.

Dextrin Widely Used

Dextrin is widely used in the arts and commerce. It has been on the back of every postage stamp since the first penny queen's head was issued, and on envelope flaps, where it may be recognized by its sweet taste. The ordinary mucilage is made with it. It is a perfect substitute—where an adhesive is needed—for the much more expensive gum arabic. It is used for stiffening, sizing, and glazing calicoes, nets, crepes, laces, silks, papers, cards, etc., and has done much to cheapen the production of these fabrics. It occurs naturally in old potatoes and is found in young wheat plants in small quantities. In the sprouting of seeds and buds it is a product from starch in its progress toward sugar. It often constitutes as high as ten per cent of bread, and it produces the sweet glazing noticed on loaves of bread as they come from the oven.

The Manufacture of Dextrin

Commercially, dextrin is made by heating potato starch, —or any starch for that matter, but the potato product is cheapest—in iron pans to 300 degrees Fahrenheit. It also may be produced by the action of dilute acids or alkalis, diastase or saliva, on starch. It occurs in semi-transparent yellowish-brown lumps, which become pale yellow on powdering. Commercial dextrin always contains some glucose—grape sugar—and this accounts for the sweet taste of a postage stamp—but it is not advisable to taste it in this way, for sanitary reasons.

In displacing gum arabic in the useful arts dextrin performed a notable service, for acacia always is comparatively expensive and often very scarce. It made calico more than anything else had done, the fabric of those who could not afford higher-priced goods.

Of the purely accidental discoveries dextrin must be given a niche by itself. The calico-printer certainly was not looking for it, or anything else, when he found it. He was smart enough, however, to recognize the value of his discovery, even though he did not possess sense or steadiness enough to put the valuable secret to such purpose as would benefit himself. His fondness for another product in the evolution of starch and dextrin stood in his way. Because dextrin was discovered by a drunken man it does not necessarily follow that is a good condition to be in when delving into nature's mysteries.

ONTARIO TIMBER DEAL COMPLETED IN PHILADELPHIA

Sudbury, Ont., October 4. —The announcement has been received at the Sudbury offices of the Algoma Eastern Railway that the sale of 500,000 acres of timber lands owned by the company along the line of the Algoma Central, between Oba and Hearst, for $1,300,000, was completed on Monday in Philadelphia, after six months' negotiations. General Manager W. H. Farrell stated that President Montgomery, of the Algoma Eastern Railway, would likely announce the identity of the purchasers on his return to Sault Ste. Marie on Saturday. The purchasers are believed to be American pulp and paper interests. It is probable that the purchasers will erect a mill on the property.

The first payment will be $150,000, and the balance will be in quarterly instalments.

THUNDER BAY PULPWOOD LIMIT SOLD

Toronto, October 2. —The successful tenderer for the pulpwood limit in the Thunder Bay district, recently advertised for sale, was according to the announcement today at the legislative buildings, Arvo Paju, a lumber man, of Port Arthur, Ont. He secures, as a result of his bid, the timber rights on one lot situated one-half in Concession 7, and one-half in Concession 8, in Nipigon Township, and the conditions of the sale obligate him to complete his operations by April 30 1923.

The prices at which the sale is made, including the customary Crown dues are: Pine, $10 per 1,000 feet; spruce and poplar, $7.50 per 1,000 feet; other timber, $2 per 1,000 feet; ties, 45 cents each; spruce pulp, $2.50 per cord; other pulp, $2 per cord; fuel wood, 50 cents per cord.

T. A. P. P. I. TACKLES WASTE

There were three main lines of discussion at the Detroit meeting this week of the Technical Association of the Pulp and Paper Industry—elimination of wastes, drying of paper, and methods of testing. Every session was very well attended by members who were deeply interested in these problems and there was no lag in the discussions. The frankness with which faults were admitted and successful methods were described is a distinct credit to the happy and harmonious relations that exist among pulp and paper makers. The whole meeting was a serious consideration of matters of vital interest to the industry. The information received and the plans made for the solution of pressing problems will be worth thousands of dollars to the industry.

In the consideration of wastes, the principal topics were barking waste and white water waste. The problem involves first a measurement of the amount of waste and then the development of means of recovery and utilization. These matters were thoroughly gone into, and, on the basis of their preliminary report, the committee, now divided into appropriate sub-committees, will have some valuable material for presentation at the spring meeting.

It was gratifying to note the helpful cooperation of Canadian technical men in this good work, which will benefit the whole industry.

The session devoted to paper testing methods covered a broad field and brought out some interesting points that will later be brought to the attention of paper makers. Such matters are: accuracy of instruments, signifance of tests, tolerance in deliveries, etc.

Paper drying was another big subject for the consideration of which the whole of Tuesday morning was devoted. Even after the meeting, various groups about the hotel were eagerly discussing some point brought up in the meeting. Such work as the committee on Paper Drying is doing will result in big economies to papermakers.

Outside of these three topics, the subject of Vocational Education claimed much attention at the meeting. Several mills are organizing night classes at which the offical textbooks will be used. These books are also the basis of correspondence courses conducted by the Department of University Extension of the Massachusetts State Board of Education (for Massachusett only), by the Extension Department of the University of Wisconsin, and by the Institute of Industrial and Domestic Arts, at Gardenvale, Que.

The banquet was a very pleasant affair. Prof. White of the Chemical Engineering Department of the University of Michigan spoke very effectively on the training of men for industry. He emphasized the value of giving a man a start toward some definite industrial career and providing an opportunity for special research along specific lines after he gets a sound grounding in fundamentals. Judge Tuttle. of the United States District Court for Eastern Michigan spoke on the need for each person to assume his share of the responsibility for the good government of his own local community. There is too much tendency to "Pass the buck."

Inspection trips were made to the plants of the Port Huron Sulphite and Paper Co., the Detroit Sulphite and Paper Co., the Ford Motor Co., and the University of Micigan, where a complimentary dinner was given by the Trustees.

THE ART OF PRINTING

The average man accepts his newspaper, his book or his illustrated magazine with little or no thought of all that has gone into its production. It is something, says the *St. John Globe,* that he has always had and without which he cannot imagine an existence. The tremendous strides made in the art of printing, both in letter press and as regards the art of illustration, is demonstrated in a series of articles published in two sections of the *Boston Transcript* for August 29. The story the writers tell is really the story of the development of printing on this continent as shown at the Printing Art Booth at the Graphic Arts Exposition, now being held in Boston, and is of intense interest to printers and publishers and to artists, who no longer fear that through the medium of the printing press will their genius be betrayed. It is impossible to wonder what would be the feelings of Jose Glover and his associates, Stephen and Matthew Daye, could they return to earth and watch the process of printing a modern paper. Mr. Glover, who was a clergyman, attracted by the opportunities for religious freedom offered by the British Colonies, started for Cambridge in 1638, intending to start a printing office in what was then a part of British North America. He died at sea, and shortly after the arrival of the family in Cambridge, Mrs. Glover married a Mr. Dunster who was the president of Harvard College. Mr. Dunster through this marriage obtained control of the printing press and types with which Mr. Glover had intended to establish the first printing office in British North America. He carried out the plan as conceived by Mr. Glover, engaging the printers, Mathew and Stephen Daye, whose first production, "The Freeman's Oath," would be today a priceless treasure if any copies of it were known to exist.

Matthew Daye, who was but eighteen years old when he came from England, and who died at the early age of twenty-nine, had in those few years devoted himself to the art of printing, and crude and queer as his odd little hand-press looks today, he was able to produce work that shows a steady improvement. The press, after a hundred years of activity, finally found rest in the State Capitol at Montpelier, Vermont, where today it is the subject of much interest to men who operate the complicated machines that are necessary to produce the modern newspaper. Through some means or the other, the business of printing, as well as the press itself appears to have become incorporated with the activities of Harvard, and on it later was printed John Eliot's famous Indian Bible, for which twenty pounds of new type was sent from England as well as a master printer. The records indicate that about 1692, when the Glover press had passed into the possession of Samuel Green, for some reason printing was discontinued, later to be resumed under the auspices of the college. The Glover press was taken to New London, Connecticut, and was used until 1783. Apparently the printing of books in the early days in the colonies was controlled by the homeland. When the Rev. John Eliot desired to print his Bible a master printer one Marmaduke Johnston, was sent to Cambridge by the members of a corporation known in England as the "Company for the Propagation of the Gospel Among the Heathen Natives of New England and Parts Adjacent in America." Johnston and Green were installed in a building in the Harvard yard called the "Indian College," and this may very properly be regarded as the first printing office in Britsh North America. From this small beginning a mighty plant has grown to which science has brought much in the way of artistry. Not only fearful and wonderful is the making of modern newspapers, but beautiful as well, all of which is evident to the readers of one of the great dailies of the day. Romance does not confine itself to the pages of a story, is evident in all great accomplishments, and never more so than in the history of printing. — Montreal Gazette.

CANADIAN EXPORTS OF PULP AND PAPER AUGUST, 1922

Exports of pulp and paper for the month of August were valued at $10,621,273, an increase of $883,021 over the previous month and of $1,225,882 over August 1921. Compared with the July figures the greatest increases were shown in newsprint, bleached sulphite pulp and mechanical pulp.

The figures for the month of August 1922 and 1921 were as follows:

	August 1921		August 1922	
PAPER:	**Cwts**	**Value**	**Cwts**	**Value**
Newsprint	1,306,429	$6,015,305	1,680,472	$5,933,825
Book Paper	961	11,349	6,684	44,053
Other paper and Manufactures	—	223,683	—	576,448
Total		$6,250,337		$6,554,326
PULP:				
Sulphate (Kraft)	152,674	$ 587,664	253,158	$ 774,643
Sulphite Bleached	187,945	834,445	300,669	1,132,910
" Unbleached	144,518	489,261	347,110	852,666
Mechanical	435,955	1,233,684	795,168	1,306,728
	921,092	$3,145,054	1,696,105	$4,066,947

Book Paper exports show a big increase over August 1921 as do exports of all kinds of pulp, the quantity of unbleached sulphite exported being more than double the quantity in August 1921.

The principal countries of destination of these exports in August 1922 were:

	Paper	**Pulp**	**Total**
United States	$5,612,913	$2,986,419	$ 8,599,332
United Kingdom	456,170	738,236	1,194,406
All Other	485,243	342,292	827,535
	$6,554,326	$4,066,947	$10,621,273

Exports of pulp wood in August amounted to 120,021 cords valued at $1,276,601 compared with 90,965 cords valued at $946,946 exported in July.

For the first five months of the current fiscal year there is an increase in the value of pulp and paper exports of $6,180,950 compared with the corresponding five months of 1921.

Details are as under:

	5 months 1921		5 months 1922	
PAPER:	**Cwts**	**Value**	**Cwts**	**Value**
Newsprint	5,133,221	$25,774,395	7,694,841	$27,257,382
Book	11,624	149,586	14,672	99,510
Other Paper and Manufactures	—	1,680,920	—	2,465,165
		$27,604,901		$29,822,057
PULP:				
Sulphate (Kraft)	664,611	$ 2,607,735	1,187,814	$ 3,630,106
Sulphite Bleached	541,045	2,714,912	1,304,962	4,827,764
" Unbleached	839,826	3,335,375	1,662,598	4,200,419
Mechanical	1,431,389	3,463,717	2,450,943	3,427,244
	3,476,871	$12,121,739	6,606,317	$16,085,533

Exports of pulp wood for these five months amounted to 411,661, valued at $4,255,333 compared with 371,780 cords, valued at $4,882,365 in the corresponding period of 1921.

A FORWARD STEP

In the *Morning Chronicle,* Halifax, N.S. for September 29, there appears an editorial that expresses at once so forcefully and so beautifully the need and advantages of conserving our forest resources—and incidentally our agricultural interests and water powers, that we reproduce it with the hope that our readers will give it the study and contemplation the subject deserves.

Wherever busy Mother Nature is allowed her own way without being crossed or balffled by the "wind that bloweth where it listeth," she grows trees. It is man's work, wherever he goes, to make a settlement, to cut them down. Because they have grown up without effort on his part, he pays little more heed to them than he does to the grass, which though destroyed today is next year as luxuriant as ever. If the tree is in his way, or can be of use to him, he cuts it without compunction. Seldom is a passing thought given to the long years needed for its growth, to the suns that have warmed and the rains that have watered it, to the humus its own dead leaves have supplied from year to year, nor the richness it has thus added to the soil where it has stood. The wisdom of Dame Nature is unmatchable, but the desire of man can make it of none effect.

Trees afford more than shelter to the birds and tiny creatures of the forest; nor is their usefulness limited to the grateful shade they afford man; nor to the bulwark they form against landslides; nor their invaluable services as reservoirs of moisture which helps the earth to bring forth her fruits. All these they do, and more also, but they are things of beauty besides, which appeal to man's aesthetic sense, helping to lift him above the mere brute creation seeking to gratify animal needs alone.

The tree is an inspiration, whether wearing the tender greene of spring, the full leaf of summer, the russet, gold, and red of autumn, the bare graceful twigs of early winter or when crowned with snow in the depth of that season. There is every reason why trees should be spared whenever possible, and none why they should be wantonly destroyed.

Man's necessities must always come before regard for Nature's inanimate expressions, but when those have been met, and his profit also provided for, there is no reason why the killing out of trees should go on. Every tree cut for commercial purposes should be replaced, and the amount of timber to be cut from any area should depend upon the character of the country, the patential value of the timber if allowed to stand a few more years, the necessity for protection of crops and of the fertility of the soil.

Most of the Provinces of Canada have robbed future generations—for whom all natural resources should be regarded as a heritage to be used and conserved by any present generation—and have injured the productive powers of the land by indiscriminate destruction of trees by fire and by the axe. It is time to call a halt; to consider how the trees grow, what they mean to the country as a source of revenue and as an aesthetic force, and to inaugurate a definite policy of conservation and protection. Nova Scotia could well afford to lead the way.

The *Morning Chronicle* has long urged the importance of the conservation of our forest resources, and the vigorous campaign which Mr. Barnjum has been conducting has done a great deal to stimulate public interest in this vital question. There is gratifying evidence that the Government recognises the need for implementing existing measures for the protection of our forest assets. Announcement was made yesterday that all Crown Lands have been withdrawn from either sale or lease in the future, which means that these lands will be held for the benefit of the public. This step is taken in the interest of forest conservation. It will be welcomed as a progressive move on the part of the Province in the direction of an effective forest protection policy. It is to be hoped that this is an earnest of the determination of the Government to institute a vigorous policy for the conservation of our wood resources and the protection of our water courses and water supplies.

The next step naturally will be the adoption of well-considered measures for the protection and propagation of the growth of Crown Land areas. Nova Scotia's forest resources are of inestimable value to the future of the Province, and the Government should direct its thought and its energy to the formulation and execution of measures which will strengthen the existing laws and provide effectively for the safe-guarding of our future wood supplies and the adequate protection of our streams and water courses upon which the welfare of our country so greatly depends. We believe enlightened public opinion will support the Government in leading the way for the adoption of a progressive and enterprising policy of forest conservation.

FAILING IN BUSINESS

"Men fail largely for three reasons," declares Dr James M. Fitzgerald, vocational counsellor who has placed 16,000 persons in their right jobs. Writing in Forbes Magazine (N. Y.), he says:

"First, thep cannot analyze themselves correctly, nor are their parents or teachers able to do so.

"Second, men do not form logical plans of procedure.

"Third, they lack self-confidence and continuity of purpose.

"Rivet these things accurately for a man and success is inevitable.

"The failures that we make in life, the failures that we make in business are largely fundamentally inherent in the individual; that is to say, lack of education, lack of perception, lack of understanding of himself some weakness in his character, some physical disability or weakness, something deficient in his temperament, or an imbalance in his personality, are the causes for those failures.

"More than 40 per cent. of the failures in business are due to men's inefficiency and misdirected selections of their vocation, or to faulty education for their business. This should challenge the strong, clean-cut, high-thinking type of business man."

ALL CHILDREN UNDER SIXTEEN YEARS MUST ATTEND SCHOOL DAILY

All children in Ontario must attend school until they are sixteen years of age. No exceptions are made to this rule. A number of parents have allowed their children to remain out of school this season when they had reached fourteen, evidently of the opinion that fourteen was the age. The Adolescent Act is very strict and provides that all children must remain in school until they are sixteen years of age. In addition to that, the Adolescent Act is enforced and from time to time, officers drop around to see that all children are actually attending school.

Parents would be well advised to send children that are now out of school and are not yet sixteen years of age, to enroll right away.

DISPOSAL OF CAUSTIC SLUDGE

Notes on the Christie Vibratory Process

The handling of waste lime sludge has long proved one of the chief difficulties of the manufacturer making caustic soda for his own requirements. The days have passed when this waste could be flushed with impunity into rivers and drains. Convenient tips are disappearing, and in any case are costly, while the cartage of the consolidated sludge is alone a heavy expense, and brings penalties for road fouling by the unsightly drip from the vehicles, a cause which is fast bringing the railway companies to refuse the freight altogether. The obvious remedy is to dry the material and dispose of it to manufacturers in other industries or to agriculture. This, however, also has its grave difficulties on account of the nature of the material, even when consolidated as far as possible in stationary or rotary vacuum filters. It is obviously necessary, for fuel economy, to reduce the water contents to the limit, but under the best conditions there remains 45 to 50% of water.

In this state the material has a stubborn consistency that introduces trouble in any form of conveyor, and only allows the material to enter any of the convenient forms of driers in lumps of a size so uneven as to render the economic control of the drier almost impossible. The tendency to "ball" the charge further intensifies this difficulty.

A recent invention of an extremely interesting, but nevertheless simple character promises, as the result of extended experience, to eliminate these troubles, and to convert a nuisance waste product into a valuable commodity. Confronted with these difficulties Mr. H. W. Christie of The United Turkey Red Company, together with his staff, devised a successful process and apparatus which has now been working some time in their works, and for which patents have been granted in this and several other countries. They discovered that when this caustic sludge (as well as other similar materials) is subjected to vibratory influence it has the remarkable effect of converting this stubborn clay-like material into a viscous fluid without in any way increasing the water contents.

In application, the sludge, de-hydrated as far as possible by vacuum filters, is discharged into a large receiver equipped with the apparatus required to operate the patent, this apparatus being of a surprisingly simple character and absorbing little more than ½ h.p. for an output of one ton per hour. Under the influence of the vibratory treatment the sludge flows from the orifice of the receiver in a continuous cylindrical tenacious stream, the character of which may be judged from the photograph illustrated. On leaving the orifice it is picked up by a simple belt conveyor on which it lies, still maintaining its formation, and in this way it is directed straight into the cylindrical rotating drier.

As an indication of the nature of the action, it is instructive to observe that though the receiving vessel has a permanently open discharge, if the vibrator be temporarily stopped, the flow immediately ceases.

It is also interesting to note that even after entering the drier, and during its progress through that machine, it still maintains its form and pipe-like shape, until the drying causes complete disintegration. This is of the greatest importance in view of the tendency of this and similar materials to ball up, thus presenting the worst possible conditions for rapid and even drying.

The practical outcome of the application of this invention has taken the form of placing on the market a dry, evenly powdered carbonate of lime in a form which makes it not only acceptable to the farmer for even distribution on the land, which is important, but allows the use of mechanical distributors. One of the chief objections hitherto shown by the farmer to the use of this sludge has been its uneven character, and the difficulty of applying it with certainty to the soil in the proportions required.

The purely local demand is now in excess of the supply, and it opens up a field for the development of this waste product which should solve once and for all the difficulty of disposal in other parts of the country.

The process is known as the "Chistie Patent Vibratory Process," and its development has been placed in the hands of Ernest Scott and Company, Ltd., the chemical engineers whose caustic soda plants are so widely distributed throughout the various industries, and it should thus stand every chance of successful exploitation. Those interested are invited to write to this firm, either at Kingsway House, Kingsway, London, W.C.2, or at 19, Waterloo Street Glasgow.—

The Chemical Age.

ANOTHER MATCH FACTORY FOR E. B. EDDY CO.

Ottawa, October 3. —The construction of a match factory that would entail the expenditure of $1,000,000 has been considered by officers of the E. B. Eddy Company Limited, of Hull, Que. The initial plans, it is stated, provided for the erection in Hull of the most modern match factory in the British Empire.

Due to substantial increases in assessment it is stated that the company have abandoned the plans for the present at least. There is a possibility, however, of the Eddy Company erecting the factory at Deseronto, where the company acquired some months ago a small match factory.

THE WORKING CLASS

Is there a real "working class" in the United States?

"I've been all over New York looking for a workingman, and I haven't found one," said Ernest J. P. Benn, a London publisher, during a visit here. "Men work, but they are not workingmen. Every Chinese and Italian immigrant and bootblack and bellboy has Fifth Avenue in his eye, and so he wears a white collar and looks like a clerk—and the clerk wears a flower in his coat and looks like an employer! And they all take an interest in doing well what they do and going on to do something else that's better.

"What is a bootblack in England? He is steeped to the eyes in blacking, his clothes are saturated in it, his face and hands stained with it, and he never washes it off. Here my boots are blacked by a man who does it with the maximum of speed and efficiency and the minimum of damage to his hands, and he wears a collar and washes when his job is done.

"You have no real poverty: because you have no inefficiency. If any of you are poor you don't wallow in it; you have the determination to beat it and get up.

"Because there is no inefficiency and no poverty and no hopelessness here, socialism will not become rampant as it has in England, where our Labor Party numbers ten million people and has imbued fully half the population with the ambition to destroy capitalism. There is no possible chance that this collective idea will ever take root here, as it has all over Europe since the war, because there is no soil in which it can grow."

Technical Section

REVIEW OF RECENT LITERATURE

A-Properties and Testing of Materials and Products

A-3. Bamboo Pulping Apparatus. U. S. patent No. 1,398,861, JAMES L. JARDINE, Nov. 29, 1921. **Paper,** xxix, No. 19, 11-12, (Jan. 11, 1922). The apparatus comprises essentially means for feeding the stems of bamboo or the like endwise through preferably a brushing device wherin adherent dirt and other readily detachable substances are removed from the exterior of the stems, to one or more pairs of cracking rollers so set, either horizontally or more or less vertically, that the stems are cracked longitudinally and flattened. The cracked and flattened stems pass to a plow device comprising a blade part adapted to separate the stems, and a share part adapted to lay the separated portions side by side on a conveyor, which delivers them to the first of a series of pairs of crushing and disintegrating rolls, each pair consisting of one plain and one circumferentially and comparatively finely grooved or corrugated roll. From the last pair of these rolls the crushed and disintegrated stems are delivered over a fixed knife with which coacts a rotary blade driven at such a speed relatively to the surface speed of the rolls that the stem tissue is divided into portions of convenent length. A. P. -C.

A 3. Papyrus and Papyrus Paper. J. NICOL DE PORTEMONT. **Papier,** xxiv, 484-487, (Nov. 1921). A general review of previously published work on the paper making qualities of papyrus.—A. P. -C.

A-3. The Manufacture of Esparto Pulp. Papeterie, xliii, 1113-1118, (Dec. 25, 1921); xliv, 18-22, 66-74, (Jan. 10 and 25, 1922). A description of esparto, its habitat, and transformation into paper pulp, taken from a manuscript dated Tunis, Aug. 13,1899.—A. P. -C

A-3. Esparto Pulp and Paper. E. ARNOULD. **Papier** xxiv, 531-533, (Dec. 1921). A discussion of the qualities of esparto pulp and esparto papers.—A. P. -C.

A-3. Grasses as Sources of Paper Fibers. Paper, xxix, No. 15, 20-23, (Dec. 14, 1921), No. 17, 9, (Dec. 28 1921). An outline of the results obtained at the Imperial Institute on the paper making possibilities of the following giant grasses from India and Africa: baib, ulla-grass, nal, **Saccharum spp.,** munj, pampas grass, Spanish reed, **Andropogon intermedius** (R. Brown), spear grass, moya grass, dab, tambooki grass, Johnson grass, **Andropogon Tristachya Rehmanni** (Hackel), **Pennisetum purpureum** (Schumacher), lalang grass, porcupine grass, pairie grass, para grass, camelote.— A. P -C.

A-3. Utilization of Reed (Arundo Phragmites) in Paper Manufacture. EMIL HEUSER. **Papierfabr.,** xviii, No. 7, 115-117 (1920); **Paper,** xxvii, No. 9, 23, 32, (Nov. 3 1920). Translation by C. J. West. Description of the investigation leading to the taking out of ger. patent No. 304,285, Oct. 15, 1919, granted to Die Verwertung inlandischer Produkte G. m. b. H., Charlottenburg. The patent provides for the utilization of the fiber of the rootstock for textile purposes, etc., while the starch and sugar constituents serve for the preparation of alcohol and feeding stuffs. The decomposition of the stock for the preparation of the fiber is carried out by the action of dilute caustic soda at 100° C. Alcohol is obtained by the fermentation of the rootstock before the alkaline treatment. This gives a residue suitable for cattle feed. Finally, a mechanical pulp may be obtained from the rootstock, which is surprisingly suitable for board manufacture. — A.P.-C.

A-4; 5. The Testing of Wood Pulp. G. H. GEMMELL, F. I. C. **Paper,** xxvii, No. 9, 24-25, 36, (Nov. 3, 1920); **Pulp and Paper,** xix, 555-559, (May 25, 1921). The weak point in the present method of testing wood pulp for moisture lies in the selection of the bales. The official wedge method of sampling leaves little to be desired in the way of improvement if due care is exercised. Records of a large number of duplicate tests made from the same bale by the author and mill chemists show that rarely does the difference exceed 0.1 per cent. All causes of difference would be eliminated if bales were sent out uniform in weight and moisture, in accordance with the contract note which they admittedly are not. Examples are given to show that irregularities in weights and moisture contents of bales give rise to variations in the results of two or more tests, while where there is uniformity in weight and moisture duplicate tests agree. It is suggested that if each bale were legibly stamped and numbered, and bore the weight and air-dry or bone-dry test per bale, the analyst could take half the bales for testing below and the other half above the average. Suggestions are made concerning certain of the English contract clauses to the testing of consignments. — A.P.-C.

A-14. The Penetrability of Filter Paper. R.C. GRIFFIN and H. C. PARISH, Arthur D. Little, Inc., Cambridge, Mass. **J. Ind. Eng. Chem.,** xiv, 199-200, (March 1, 1922). The common methods of testing the penetrability of filter paper are discussed, and a new penetrability tester is described. It consists essentially of a lead cup to which the water is fed at the bottom under a constant head. Three-quarters of an inch below the overflow there is a screen, under which is placed a circle of the paper to be tested. To make a test, the paper is put in position the upper portion of the apparatus placed on top, the water slowly turned on until it overflows from the cup, and a 100-cc. volumetric flask is placed under the overlfow spout. The penetrability figure is the number of seconds required for 100 cc. of distilled water at 20 degrees C. to pass through a circle of the filter paper 2 inches in diameter under a constant 9-inch head. Attention is called to the effect of temperature (See Rigaud-Monin, **Papeterie,** xlii, 818-821, Sept. 25, 1920; **Pulp and Paper,** xix, 482, May 5, 1921.). Time has a considerable effect on the speed of filtration, even when nothing but distilled water passes through the paper. The penetrability figures increasing manifold in a relatively short time 25 secs. to 1000 secs. in two hours for a fast paper, and 175 to 775 in one hour for a slow paper. Comparative penetrability figures are given for five representative grades of quantitative papers.—A. P. -C.

A-14, K-1. Denoel Sizing Tester. U. S. patent No. 1,404,586, JOSEPH DENOEL, Jan. 24, 1922; Fr. patent No. 526,901. The patent covers an apparatus in which the paper to be tested is secured to a board against which a series of drawing pens (8) of gradually increasing point widths are pressed by means of an adjustable weight on a lever arm. The board with the paper travels under the pens, and the latter are automatically raised when the board reaches the end of its course. The sizing is judged by noting the width of the first line showing through the paper. The main advantages of the apparatus are uniformity in the relative speed between the pens and paper, in the pressure exerted by the pens on the paper, in the amount of ink deposited, and in the increase in the width of the strokes. The results of several tests are therefore comparable, provided an ink with known characteristics be used.—A. P. C.

A-14., Witham Flexibility Tester for Paper. Can. patent No. 214,457, GEO. S. WITHAM Jr., Nov. 29, 1921. The paper is suitably held between four pins and loosely held by a clamp which hangs from one end of a beam, the other end of which carries a suitable container. The beam carries a pointer which moves over a graduated scale. Water is allowed to flow into the container from a burette, thereby lowering one end of the beam and raising the end carrying the clamp, so that the paper is bent. The pointer indicates the amount of bending of the paper, and the force can be calculated from the amount of water which has been delivered by the burette.—A. P. -C.

A-14. Influence of Moisture on the Testing of Paper. Paper, xxix, No. 14, 16-18, (Dec. 7, 1921); Paper **Trade J.,** lxxxiii, No. 24, 47-48, (Dec. 12, 1921). A discussion of the influence of the humidity of the surrounding atmosphere (and consequently of the moisture content of the paper) on paper tests. In laboratories such as the U. S. Forest Products Lab. or the German Prüfungsamt, all the mechanical tests are carried out in a constant temperature and constant humidity room. But this is not possible in most cases. It is then necessary to observe the humidity of the air and apply a suitable correction to the results obtained, to bring them to what would have been obtained under 65 per cent relative humidity.—A. P. -C.

A-14. The Weighing of Papers and Cardboards. H. L. HOLME and M. ARGY. **Papeterie,** xliii, 1010-1014, (Nov. 25, 1921). The authors have succeeded, by subjecting ball bearings to a special treatment which they do not disclose, to use them in the manufacture of quadrant balances and obtain a satisfactory sensitiveness. With a 3 kilo board balance a load of O. 1 g. causes an appreciable deflection; while more delicate balances have been constructed in which a load of O. 2 g. causes the indicator to move completely across the scale, the divisions being equal to 0.001 g. and each of them being over 1 mm. long.—A. P. -C.

A-14. The Scott Tearing Strength Tester. Paper, xxix, No. 9, 26-27, (Nov. 2, 1921) A description of the tester and of its mode of operation.—A. P. -C.

A-14. Notes on Paper Testing. JAMES STRACHAN. **Paper,** xxvii, No. 9 18, 32, (Nov. 3, 1920). As the eye is much more sensitive to yellow than to blue, the amount of lignified fibers is frequently overestimated when examining such pulps as groundwood, with Herzberg's reagent under the microscope. The remedy is to use a blue color screen in the usual manner. Quantitative errors also arise in using an objective of too high power. It is suggested that the most reasonable power to use is that which gives sufficient definition to identify (with practice) similar fibers, consistent with the largest possible field of view. The draw tube should be set to give a field of view exactly 2 mm. in diameter. Micrometric observations of the average length of beaten fibers can then be made during the examination. In making accurate micrometric observations of the diameter of fibers and central canals, chloride of zinc should not be used as it distorts the structure. An aqueous solution of an aniline dye is most suitable for this work and also for observation of fine detail under the highest powers. To keep a mount of paper fibers stained with any solution, particularly with iodine, for a few days without evaporation or fading, a ''live-box'' will be found most useful. In testing the bursting strength at least ten tests should be taken at regular intervals **across** the sheet, as in many papers there are zones of relative weakness and strength parallel to the machine direction. The paper must be clamped as tightly as possible. In the type of machine where the paper is clamped by a screw the strength may be anything from 5 to 15 per cent too high through insufficient clamping. Erroneous results are obtained by bursting two or more sheets at once ''to get an average''. This method of testing 1, 2, 3, 4, etc., sheets is worth further investigation, in view of the fact that the exact nature of the components of the bursting strength are not exactly known. No regular relationship has been found between average bursting-strength and average tensile strength, as is to be expected from the heterogeneous structure of the paper. It is suggested that the stretch and the tear of the paper (which are the two factors which influence bursting strength as usually tested) would be reduced to uniformity of behavior in a machine resigned to test the shearing strength of a definite thickness of paper obtained by firmly clamping the necessary number of sheets to give the required thickness under a definite pressure. In such a case any departure from the theoretical shearing stress (calculated from the tensile strength) would be found to arise from peculiarities instructure of the paper and thus indicate faults or special qualities. The principal discrepancy in measuring the bulk or thickness of paper arises from two facts: (1) paper not being a homogeneous substance is compressible, and (2) the pressure applied by the micrometer may vary and does not vary in practice with personal equation and type of instrument. When paper is ordered to bulk, either the micrometer used should be specified or the thickness of a definite number of sheets under a definite pressure should be stated. Minor discrepancies in the measurement of the thickness may arise from the condition of the paper. A sheet of very dry paper is appreciably thinner than the same sheet containing its full content of natural moisture. — A.P.-C.

A-15, L-5. Process of Dissolving Cellulose., U. S. patent No. 1,390,995, I. KITSEE, Sept. 20, 1921. **Paper,** xxix No. 12, 12-13, (Nov. 23, 1921). The process, which is applicable to all methods or processes of dissolving cellulose in which a metal, or its compounds is required for the dissolving action and more particularly to the cuprammonioum process, consists essentially in producing a rubbing action between the cellulosic material (cotton, paper, ect.) and a suitable metal (e. g., copper) in the presence of a suitable solvent (e. g., ammonia). —A. P. -C.

A-15. Action of Formaldehyde on Cellulose. M. SAMEC and S. FERJANIC. **Koll. Chem. Beihefte,** xiv, 209-226, (1921); **Chem. Soc. Abs.,** cxxii, Pt. 1, 115, (Feb. 1922). Purified sulphite cellulose has been heated under pressure with formaldehyde or formic acid at 143 degrees for various periods of time and

(Continued on page 888)

PULP AND PAPER NEWS

Mr. A. D. Huff of the Riordon Company Montreal left for Haileybury on Thursday last to look after his two sisters who reside there. After he left a telegram was received stating that the ladies were safe but had lost all their belongings in the fire which swept Northern Ontario. Major General J. B. White of the same Company also left for the devasted district in connection with the company's limits at Kipawa.

Spruce lumber in Eastern Canada is getting scarce and prices at the mills are advancing. The demand especially from the States is very good and more business could be done if cars were available. It looks as if the cut this season will be larger than last year and with the rise in woods' operations the cost of getting the lumber out will show an appreciable rise. On the Pacific Coast the mills are very busy on export orders and also for American account a very brisk trade being done with shipments to the Atlantic via the Panama Canal.

F. S. Pearson Engineering Corporation, Fisk Bldg., Broadway and 57., Street, New York City, have reestablished their Department for Industrial Management and Technical Auditing of Industries and Public Utilities. This Department will be carried on together with their usual work of financing, developing, design and construction of Engineering Projects and Industrial Plants.

V. T. Haney, Toronto, representative of the Rolland Paper Company has just returned from vacation trip to the Laurentians.

The plant of the Temiskaming Pulp and Paper Company, Limited, was among the few exceptions to the general disaster overtaking Haileybury. This fine groundwood mill situated in the northeasterly part of the town, suffered no loss at all.

4,000 FOREST FIRES DURING SUMMER

Ottawa, Oct. 5. — What Canada loses by forest fires is shown in a statement issued by the Canadian Forestry Association today. "Last year," says the statement, "Ontario lost 700,000 acres of forest reserves by fire and during the past summer 4,000 fires, mostly started by human agency, swept through the very limited stock of Canadian timber. Canada has lost more money from forest fires since confederation than from all other types of fires combined.

"If settlers and all types of woods travellers would only desist from setting fires in or near forest areas during dangerous seasons, the forest would be as free from fire disasters as the average town. The loss of town buildings can be restored in a few months. The loss of the timber will take at least sixty years to replace and this does not include the houses around Haileybury."

BELGO PAPER BONDS SOLD TO SYNDICATE

Recently in these columns reference was made to the incorporation of the Belgo Paper Company, Limited, formed to acquire the assets and undertakings of the Belgo Canadian Pulp & Paper Company. The new company has now come into existence, and will within a few days take formal possession of its property.

The capacity of the newsprint paper mill at Shawinigan Falls will be immediately increased from the present output of 63,000 tons of newsprint per annum to one of 105,000 tons per annum. The installation of the two new paper machines which will be required is already under way, and it is understood that one of these machines will be in operation early in 1923.

In connection with these additions to its plant, the Belgo Paper Company will issue $1,500,000 6% first mortgage bonds, and announces that these have been sold to a syndicate composed of Newman, Sweezey & Company, Limited, Wood, Gundy & Company, and McLeod, Young, Weir & Company. The bonds will shortly be offered to the public.

FERNOW HALL DEDICATED AT CORNELL

On October 5, 1922, at Ithaca, New York, there was unveiled over the main entrance of the Forestry Building of Cornell University a tablet bearing the name Fernow Hall. This action was taken in honer of the services rendered to forestry in America by Dr. Bernhard R. Fernow, Director of the first forest school in America, the old New York State College of Forestry at Cornell University, the first Chief of the then Division of Forestry, now the Forest Service, of the United States Department of Agriculture, and the Dean of the first school of forestry in Canada, that of the University of Toronto.

This official recognition of the valuable contribution made to forestry by Dr. Fernow was authorized by the Board of Trustees of Cornell University at a meeting held June 20, 1922. The exercises at the unveiling of the tablet consisted of a series of brief addresses commenorative of Dr. Fernow's accomplishments. The speakers were Dr. Livingston Ferrand, President of Cornell University, Dean A. R. Mann of the New York State College of Agriculture, and Professor R. S. Hosmer, Head of the Department of Forestry. One of Dr. Fernow's sons, Mr. Karl H. Fernow, now a graduate student at Cornell, raised the flag covering the tablet bearing his father's name.

To all those in any way associated with forestry in Canada and the United States the name of Dr. B. E. Fernow is well known. To him is due much of the credit of bringing about a correct understanding by the people of these countries of the aims and purposes of forestry. It is particularly gratifying to all who have worked with him that this honor should be conferred upon him while he can enjoy the recognition accorded the results of his life work. It is an eminently fitting tribute, for Dr. Fernow is justly entitled to the appellation that the professional foresters like to give him, the Dean of American Forestry.

Mr. Leo Shlick advises us that his business as consulting pulp and paper maker has grown so that he had to move from 657 Boylston St. to larger quarters at 314 Beacon St. Boston.

The people of this continent are using almost twice as much wood per capita as they did fifty years ago.

UNITED STATES NOTES

A newly formed paper concern, the Oswagatchie Paper Company, is having a mill constructed at Natural Falls, N. Y. John A. Remington, long identifield with the paper manufacturing business in that Remington group, will take up the active management of the new company. He is a stockholder in the corporation, and at the first meeting was elected to the board of directors. For the past three years Mr. Remington has been president of the Norwood & St. Lawrence Railroad Company. His practical experience in the papermaking industry was obtained through responsible positions held in turn in the mills of his father, the late C. H. Remington. His selection for a place in the management of the new undertaking is regarded as a move that should work to the benefit of the venture.

The trade in Philadelphia will be interested in observing developments regarding the formation of a new enterprise which intends putting on the market quality book papers made from esparto grass. The new concern, chartered under the laws of Pennsylvania, will be known as Esparto Papers, Inc. Besides engaging in importing, the company is to buy and sell paper and paper stock manufacture pulp and paper of all kinds. Frederick E. Hastings R. C. B. Hay, Herman Muller, James A. Lynd and John A. Murphy are the incorporators. Mr. Hastings, the head of the new organization, was associated for many years with Dill & Collins, paper manufacturers.

A number of basic books on the paper industry have been incorporated into the recently collected business library which is now at the service of visitors in the Hotel McAlpin, New York.

F. A. Juckett, for many years with the Strathmore Paper Company, is the head of a new envelope making concern which has just begun operations in a plant at Westfield, Mass. The new company will do business under the name of the Old Colony Envelope Company. Associated with Mr. Juckett are several other men of practical experience in the manufacture of envelopes. Captian Charles R. Bell, the secretary, served the B. D. Rising Paper Company for seventeen years and R. L. Lockwood, the treasurer, is a designer of note.

The International Paper Company has declared quarterly dividend of one and one-half per cent on the capital stock of the company, payable October 16, 1922, to preferred stockholders of record October 6, 1922.

Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association has addressed a letter to President Harding on behalf of paper manufacturers urging that the commission to be selected for fact-finding in the coal industry shall include in its membership neither coal operators nor miners or their representatives. Dr. Baker expressed the opinion that the people of the country will have great confidence in a non-partisan Fact-Finding Commission, and that this confidence will reflect in a very satisfactory way upon our return to reasonably normal times.

Forest fires which for several weeks past having been causing enormous damage in various parts of the United States, were mostly under control or put out by rains and shifting winds early this week. Helped by a protracted drought which had gripped a greater portion of the country, fires raged unabated until a return to natural barometric pressures came to the aid of the fire-fighters. Most damange resulted in Minnesota and several other Northern States. Maine, in the Northeastern tier, was visited by some devasting conflagrations. These were halted last Saturday by rains and slight falls of snow in some sections. Fires on the lands of the Great Northern Paper Company were reported under control at last accounts. With the beginning of the hunting season, warnings have been issued from official sources of the danger from camp fires. Such cautions have been sent out last week by the Forest Service of the Department of Agriculture and by Alexander MacDonald, Conservation Commissioner of New York State. Governor Percival P. Baxtor, of Maine, has issued a proclamation suspending the State's open hunting season and prohibiting the carrying of fire-arms in the woods. The ban, it was announced, would be in effect until heavy rains should drench the fires that are threatening the forests. This is the first time in the history of the State that a proclamation of this kind has been issued by a Governor. The ban carries with it a penalty of a $100 fine and costs for violations.

One of the Hungarian consular officers in New York City reports that the Hungarian Academy of Sciences has recorded a process for treating cornstalks so as to make paper and other valuable by products. The process, which is known as the Vegyi Ipar, yields 40 pounds of cellulose, 40 pounds of molasses and 5 pounds of artificial fertilizer from every hundred pounds of straw. The cellulose can be used for the manufacture of paper. The considerable value of these by-products makes this process much more valuable than the ordinary method of obtaining cellulose from wood chips.

Employees of the Nekoosa-Edwards Paper Company are being offered correspondence courses in papermaking by an arrangement with the extension division of the University of Wisconsin. A nominal charge is made for the instruction. This is refunded by the company on completion of the course. The university, in cooperation with the Forest Products Laboratory, is endeavoring to enable paper mill employees to gain an understanding of the chemical and mechanical processes employed in the manufacture of paper and pulp so as to put them in line for promotion.

D. E. Douty, general manager of the United States Testing Company, Inc., who is now in the Far East, has called to the attention of Japanese and Chinese reelers of silk the harmful effects of using colored paper as lining for raw silk bales. He points out that the use of a brown or reddish brown paper damages the silk through discoloration when the bales become wet in transit. The recommendation is made that no colored paper should be used in packing silk, but that white paper be used in all instances.

the products have been compared with the original cellulose. It is shown that formaldehyde reacts with cellulose and its derivates when they have been converted into the emulsoid condition. The product does not give any iodine coloration but after washing away the formaldehyde the color can be obtained after the product has been emulsified with sulphuric acid. The sulpholysis of cellulose in the presence of formaldehyde takes place differently from the action in its absence and leads to low molecular derivatives. The charring of cellulose derivatives by strong sulphuric acid is strongly retarded by formaldehyde, and in the same way the esterification of cellulose derivatives is also retarded. Formaldehyde has a similar action on cellulose derivatives. The experimental results are explained by the assumption that the formaldehyde unites to the cellulose with the breaking of oxygen rings and the formation of oxymethylene groups, and that in the cellulose molecule an internal anhydride formation follows with the hydroxyl group of a neighboring dextrose residue.—A. P. -C.

A-15. Depolymerization of Ethlycellulose. KURT HESS and WALTER WITTELSBACH. **Ber.**, liv (B), 3232-3241, (1921); **Chem. Soc. Abs.**, cxxii, Pt. 1, 116, (Feb. 1922). It is shown that the products of acetolysis of ethylcellulose, after action varying in duration from 2 to 142 hours, have molecular weights in very dilute solution corresponding with those required for a tetraethylbiose anhydride. Depolymerization of cellulose to "celluxose" occurs, therefore, with much greater readiness than has been assumed previously. —A. P. -C.

C — Preparation of Storing of Wood

C-2, K-2. Wood Substitute from Sawdust and Paper Waste. Fr. patent No. 507,501, E. BORIG and J. E. GARDERES, June 24, 1920. **Chemie et Industrie**, vi. 800, (Dec. 1921). A composition made up of about 33 per cent sawdust, 20 per cent paper waste, 22 per cent casein glue, 10 per cent chalk or limestone, and 15 per cent moisture. The proportions can be varied according to the properties desired, e. g., the paper waste decreased and the casein glue increased to give it greater elasticity. The ingredients are triturated so as to give a homogeneous mixture, which is then moulded and dried completely. The resultant product has the properties of wood, and can be reinforced by introducing perforated strips of woods in the paste.—A. P. -C.

C-5, M-10. Apparatus for Log Pile Fire Prevention. Can. patent No. 216,276, SPRAY ENGINEERING CO., assignee of B. R. T. COLLINS, Feb. 28, 1922. The entire surface of the pile is sprayed by means of a suitable water distributing system (e. g., pipe lines supported from the log conveyor) through nozzles at a pressure of about 70 pounds per square inch, thus forming a fog or mist over the whole pile.—A. P. -C.

C-7. Log Peeler. Can. patent No. 214,197, H. GUETTLER assignee of FIBRE MAKING PROCESS, Nov. 8, 1921. The logs are tumbled by means of a series of (preferably T-) bars, attached to spocket chains having a partly straight and partly concave path.—A. P. -C.

C-7. Method and Apparatus for Loosening Bark from Pulp Wood. U. S. patent No. 1,402,138, G. P. BERKEYY, Jan. 3, 1922. The wood on its way to the barking drums is passed through a tank of water kept at a relatively high temperature, the wood being wholly submerged during its passage. It is claimed that by this preliminary treatment: (1) the capacity of the drum barkers is increased 20-50 per cent; (2) there is no "brooming" of the ends of the logs because they do not remain so long in the drums; (3) the drums can be run "dry" increasing the value of the bark as fuel; (4) the method and apparatus can be used the year round with a relatively small steam consumption.—A. P. -C.

D — Mechanical Pulp Manufacture and Equipment

D-2. Recovery of By-Products from Groundwood Waste Waters. Can. patent No. 214,080, C. F. BURGESS LABORATORIES, assignee of H. F. WEISS, Nov. 1, 1921. The water separated from the pulp is recirculated over the grinder until the concentration of organic matter is raised to a maximum consistent with absence of prejudicial effects upon further grinding operations. The waste water is then treated for the recovery of the dissolved materials (sugars, alcohol, galactan, acetic acid, etc.).—A. P. -C.

D-4. Automatic Load Regulator for Motor-Driven Pulp Grinders. W. H. ARTZ, Westinghouse Electric and Mfg. Co. **Chem. Met. Eng.**, xxvi, 367-369, (Feb. 22, 1922); **Paper**, xxix, No. 21, 10-13, (Jan. 25, 1922). The Westinghouse automatic load regulator equipment consists of a control panel carrying relays, switches and rheostat, the necessary resistance and a motor-operated hyrdaulic element, controlling the water pressure in the pocket cylinders of the grinders being regulated. The method of operation of the regulator is described and its merits are enumerated. (For description of the General Electric Regulator see **Paper**, xxvi, No. 15, 11-12, (June 16, 1920); **Pulp and Paper**, xviii, 900, D-3-4, (Aug. 26, 1920). —A. P. -C.

D-4. Process of Making Mechanical Wood Pulp. Can. patent No. 215,314, E. F. MILLARD, Jan. 24, 1922. Addition to Can. patent No. 91,435, Feb. 14, 1905. A stone of relatively soft material (e. g., sandstone) is used, and the wood is pressed against it with the minimum amount of pressure necessary to cause it to engage the stone. For short-fibered pulp a fine grit stone must be used, and a coarse grit for long fibers.—A. P. -C.

D-4. Grindstone Mounting. U. S. patent No. 1,405,335, W. E. ROSEBUSH assignor to INLAND EMPIRE PAPER CO., Jan. 31, 1922. The stone is held in position on the shaft by means of a flange on each side, which are keyed to bushings fitted on right and left hand screws respectively.—A. P. -C.

D-4. Pulp Wood Grindstone Dresser. U. S. patent No. 1,406,138, WM. P. AIKIN Feb. 7 1922.—A. P. -C.

D-4. Wood Defiberizer. Can. patent No. 216,306, U. S. McMILLAN, Feb. 28, 1922. Also U. S. Patent No. 1,344,180, June 22, 1920. The wood is subjected to the action of a rotating wire brush which acts in the direction of the grain of the wood.—A. P. -C.

D-4. Wood Pulp Grinder. U. S. Patent No. 1,405,356, H. E. TIDMARSH, assignor to UNION IRON WORKS, Jan. 31, 1922. Also Can. patent No. 216,553, March 7, 1922. The slots in the transverse walls of the grinder pockets diverge outwardly, so that as the pulp passes out of the pocket it is given an initial movement outwards tending to carry it over the edge of the stone. This action is completed by a deflecting scraper placed just outside the pocket and as close to the stone as practical, thus practically preventing any pulp from passing into the next pocket and being reground.—A. P. -C.

D-4, G-8, K-1. Valley Iron Works Machinery and Tester Paper, xxix, No. 22, 10-12, (Feb. 1, 1922.) A brief description of the Henderson grinder regulator of the Valley size tester, and of the Valley wet machine, and of their merits.—A. P. -C.

D-0. Clean Water as a Preservative for Storing Mechanical Pulp. R. J. BLAIR, Pathologist and E. PARKE-CAMERON, Associate Chemist, Forest Products Lab., Montreal, Canada. **Pulp and Paper,** xx, 64-67, (Jan. 26, 1922); **Paper Ind.,** iii, 1528-1532, (Feb. 1922); **Paper Trade J.,** lxxiv, No. 9, 47-50, (March 2, 1922). Part of the pulp was stored in water, and the remainder was left in the building with the storage tanks and was left freely exposed to the air. After seventeen months this latter material was found to be in a very bad condition. A comparison between fresh lapped pulp and that stored in water shows that after seventeen months there was slight deterioration in all cases. For pressed pulp the same condition held but was more noticeable. In stored slush stock the freeness was much higher than in the case with either laps or pressed pulp stored for the same length of time under the same conditions, and the strength test were also somewhat lower. In making a comparison between the different methods of water storage, running water apparently gave a better result than either a weekly or daily change. In cold storage little deterioration seems to occur. The results indicate that water storage is superior to air storage for groundwood pulp.—A. P. -C.

E-Acid Process of Pulp Manufacture and Equipment

E-1. The Analysis of Sulphite Liquor During Cooking. A. CHAMBOVET. **Papeterie,** xlii, 866-870, 914-918, 966-970, (Oct. 10, 25, Nov. 10, 1920). Translation by A. Papineau-Couture in **Paper,** xxvii, No. 25, 16-19, (Feb. 23, 1921). In the sulphite process, as cooking proceeds there is formed a certain amount of acetic and formic acids, the former from the $CO\text{-}CH_2$ group of the lignin and the latter by the decomposition of hexoses and also because it is present as such in the wood. Hence, an acidimetric titration of the liquor does not give a measure of the free SO_2, but the sum of the free SO_2, of H_2SO_4, and of the various organic acids formed. These may be determined by means of a series of titrations after shaking the liquor with an immiscible liquid in which one or more of the acids are soluble. **Case I: Mixture of Two Acids.** Suppose a volume **Q** of sulphite liquor containing a mixture of two acids requiring **m** cc. of standard alkali, be shaken with a volume **Q'** of an immiscible solvent (e. g., ether), and that the layers on separating have volumes **A** and **E** respectively. Let **a** and **e** be the number of cc. of alkali required to neutralize the acidity of 10 cc. of the aqueous and ethereal layers, respectively, **K** and **K'** the partition coefficients of the first and second acids between the two solvents, **x** the total number of cc. of standard alkali required to neutralize the first acid contained in volume **Q** of the original liquor, and **y** the total number of cc. of standard alkali require to neutralize the second acid contained in volume **Q** of the original liquor. Then

$$x = \left(\frac{a}{10} - \frac{mK'}{AK' + E}\right) \div \left(\frac{K}{AK + E} - \frac{K'}{AK' + E}\right)$$

$$v = \left(\frac{mK}{AK + E} - \frac{a}{10}\right) \div \left(\frac{K}{AK + E} - \frac{K'}{AK' + E}\right)$$

Case II. Mixture of Sulphurous, Sulphuric, Acetic, and Formic Acids. Let **Q, Q', m, A, E, a, e,** have the same meanings as above. Let **x, y, z, t** be the number of cc. of standard alkali required to neutralize the acetic, formic, sulphuric and sulphurous acids, respectively, contained in volume **Q** of the original liquor; **K** and **K'** the partition coefficients of acetic and formic acids respectively, between the two solvents. The sulphuric acid is determined in a separate portion by precipitation as barium sulphate; sulphurous acid is oxidized to sulphuric acid by means of iodine and the total sulphuric acid precipitated as barium sulphate; and from these results **z** and **t** are calculated. Then

$$x + y + z + t = m$$

$$x + y = m - (z + t) = m'$$

$$x = m' - y$$

$$y = \frac{(AK' + E) \quad (e\,(AK + E) - 10m'}{10A\,(K - K')}$$

—A.P.-C.

E-2. Evaporation of Sulphite Waste Liquor. Can. Patent No. 214,450, H. A. NILSSON, Nov. 29, 1921. The liquor is treated at 90 to 100 degrees C. with a suitable precipitant (milk of lime, pulverized limestone, etc.), the precipitate is removed, and the liquor is then evaporated by a vapor compression system.—A. P. -C.

E-4. Sulphur Burning Device. Can. Patent. No. 214,-022, T. A. CLAYTON, Nov. 1, 1922. The air is fed to the chamber containing the burning sulphur through a curved pipe having a series of holes directed downwards which send the air directly against the sulphur, and another series of holes directed upwards which send the air into the mass of gases rising from the burning sulphur so as to mix them and burn any sulphur which has sublimed.—A. P. -C.

E-4. Oxidizing Device for Sulphur Burners. U. S. Patent No. 1,410,061, A. G. HINZKE, March 21, 1922. The outlet from the burner has two rows of perforations, at some distance one above the other, the amount of air admitted through each set of perforations being regulated by means of a sleeve with similar perforations which can be made to register with those in the outlet.—A. P. -C.

E-4. Purification of Sulphur Dioxide. U. S. Patent No. 1,410,535, CHAS. M. BULLARD, March 21, 1922. The sulphur dioxide from the coolers is passed through a tower where it is sprayed with water, which absorbs the sulphur trioxide and some sulphur dioxide. The acid solution thus obtained is heated to drive off sulphur dioxide, which is returned to the system.-A. P. -C.

E-4. Apparatus for Regulating the Acidity of Sulphite Liquor. U. S. Patent No. 1,341,361, J. B. CRANDON, assignor to CRANDON MANUFACTURING CO., May 25, 1920. An electric current is passed through the solution and through an electric heating device, thereby operating a device for controlling the addition of a neutralizing agent to the solution-A. P. C.

E-5. Continuous Wood Pulping Process. U. S. A. Patent No. 1,402,201, M. A. ADAM, Jan. 3, 1922. Wood is brought to "a finely subdivided form" i. e., of such fineness that on mixing with water it forms a true pulp which will flow freely. It is then subjected to suitable chemical action. By treating groundwood at a consistency of 10 per cent with sulphite acid at 170 degrees C. for 30 minutes, a chemical pulp apparently free from all incrusting matter was obtained.-A. P. -C.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, October 10.-Conditions in the Pulp and Paper Trade continue favorable, with a good demand for most lines of paper, very firm prices and with a broadening market for pulp. Unless appearances are very deceptive, the entire industry has embarked on a period of activity and remunerative prices. No one looks for a runaway market, for a boom which perchance might prove a boomerang, but there is general confidence that we shall see a steady trade of a profitable character. In practically all departments buying has improved and prices advanced. There is solid ground for these higher values—costs of raw materials and in some instances of labor have gone up, and naturally these have to be passed on to the consumer.

Prices of newsprint are very firm, it being reported that one mill is asking $80.00 for spot lots. We may soon expect an announcement of the price for 1923 contracts. The position as it affects prices has been under consideration, and it may be taken as pretty well assured that there will be an increase for at least the first three months of next year. Mr. P. B. Wilson, vice-president of the Spanish River Pulp and Paper Mills, Limited, and ex-president of the Canadian Pulp and Paper Association, visited Montreal last week on his way to Quebec, from which port he sailed, on the Empress of Britain, on Friday last for a six weeks' trip to England. In discussing the newsprint situation, he remarked upon the strong position of the market and expressed the opinion that conditions justified an increase in price. He asserted that both wages and raw materials are showing an upward tendency, which naturally involved higher costs for the mills. Mr. Wilson also commented on the very serious hazard to the industry involved in the forest fires, which meant serious losses to the pulp and paper companies—losses which must be taken into consideration when prices had to be fixed. In this connection, we may point out that the situation as regards forest fires, despite the many precautions taken, has improved but little, taking the country as a whole. This year the losses have been simply startling. The limits in the Province of Quebec are probably better protected than in other provinces, owing to the protective associations, and the effects of the Provincial Government. It is estimated, however, that the Lands and Forest Department in Quebec, has under consideration further and more drastic measures in order to protect the forests.

In nearly all departments of the paper trade, reports indicate that a satisfactory business is being done. Book papers, writings and toilets and tissues are in good demand, while the board mills are very active in filling orders at the higher prices.

Some good contracts for Australasia have come to hand. This trade could be largely developed if our manufacturers were able to secure the same preference as is accorded to British mills—a concession which manufacturers hope will result from Mr. Robb's forthcoming visit to Australia.

The pulp market is still very firm. Groundwood is meeting with a very ready sale at stronger values and it is probable that the advance will result in more mills making a surplus. The statistical position is excellent. On September 1 the stocks in hand in Canada and the United States were 30000 tons less than at the corresponding date last year notwithstanding that the monthly production had considerably increased. Water powers at some Canadian mills and also in the States are reported to be low. There is a demand for all the bleached sulphite that is manufactured notwithstanding the jump in values. The stocks in hand on September 1 in Canada and the United States totalled 17800 tons. Kraft maintains its firmness.

Toronto Topics

With the movement of fruit and other crops outward and the resumption of coal shipments inward, there is a noticeably strong tone of confidence in most quarters. Collections are not yet on a satisfactory level according to local banking authorities but in some wholesale quarters a slight improvement is noted.

Iron and steel, lumber, paper and pulp hold a stronger position and prices tend to firm up.

The local stock exchange passed through the last two weeks very well. The Eastern war situation led to selling on the part of speculators but the net recessions up to this week indicate a spirit of confidence.

The provincial Bank of the Ontario Government is making personal canvass of workers in industrial areas, in connection with a plan which combines saving with insurance. The considerable success attending this campaign indicates the confidence of the worker in steady employment. The situation as regards unemployment is good and workers are now gradually passing from harvest fields to lumber camps. There is every indication of heavy cuts of lumber and pulpwood.

Buying is still carried on in conservative quantities, but a fair general business in drygoods, clothing, footwear, hardware and provisions is being done.

Market Notes

Pulps continue strong and demand active.

Groundwood—Is advancing. Book grades being sold at $45.00 f. o. b. shipper, lower quotations from $32.50 up.

Sulphite—Book grades of natural $75, f. o. b. shipper and news grades $65.00 to $70.00. Bleached $90 to $100.

Sulphate—Fairly active at $75.00.

Book and Writing—Active market and in fair volume.

Waxed Papers. Greaseproof and other wrapping specialties are in good demand.

Wrappings—Business in good volume with prices unchanged but firm. No. 1 Kraft 8.15. B. Manilla 5½¢ per lb. No. 1 Manilla 7¢ per lb. Fibre Manilla 7¢ per lb. T. Manilla 5½¢ per lb.

Bags—Light Manilla, less 62½-7½-5%. Heavy Manilla, less 60%. Light Kraft, less 60-7½%. Heavy Kraft. less 50-10%.

Tissues—	No. 1 Manilla	20x30	.80	24x36	1.05
	Natural White	20x30	.90	24x36	1.25
	No. 1 Prime White	20x30	1.10	24x36	1.55
	White Sulphite	20x30	1.00	24x36	1.40

Towels—Car lots, interfolding per case $5.63. White bleached, rolls of 150 towels, 50 rolls to case $22.00 Natural White, rolls of 150 towels, 50 rolls to case, $19.00. No. 3 towels, rolls of 150 towels, 50 rolls to case, $13.75, less 22%.

Toilets—Car lots rolls. List price less 20 and 25%.

Paper Stock.—Lower grades show tendency to weaken slightly; other grades firm.

No. 1 Hard White Shavings	3.75	4.00
No. 1 Soft White Shavings	3.65	3.90
Heavy Books and Magazines	2.25	
Ledgers and Writings	2.50	
No. 1 Kraft	2.50	
Newspapers	1.40	
No. 1 Mixed Papers	1.20	
No. 1 Miscellaneous	1.15	
No. 2 Miscellaneous	1.15	
Cotton Rags No. 1 White. No quotations.		
Thirds and Blues (repacked)	37.00	
Roofing Rags	26.00	27.00

New Cotton Cuttings. Good demand, prices firm.

No. 1 White Shirt Cuttings	11¼	11½
Fancy Shirt Cuttings	6	6¼
Canton Flannels Bleached	9	9¼
White Lawns	8½	
Blue Overall Cuttings	6	

Ropes and Bagging.

No. 1 Scrap Bagging	20.00	
No. 1 Manilla Rope	5¾	6
Mixed Strings	20.00	

NEW YORK MARKETS

New York, Oct. 7—(Special Correspondence)—To say the least, the figures in the Federal Trade Commission's monthly report on the paper industry of the United States for August are highly gratifying as well as encouraging. Moreover, the report substantiates all of the numerous reports received during the past few weeks concerning the big improvement in paper manufacturing and consumption. Production of paper in August reached a new high mark for the current year, a total of 635,107 net tons of all kinds being produced in that month. The significance of this output can be obtained only through comparison with that of other times. Up to August the record month's production for this year was in March when 593,860 net tons were produced, closely followed by June when domestic mills turned out 593,335 tons of paper. It will be seen that the August output was no less than some 41,000 tons in excess of the previous best month of the year. August production also was very close to the record output of all time attained in July, 1920, in the midst of the after-the-war boom in the paper industry when, in round figures, 658,000 tons of paper were produced by U. S. mills. It will be seen therefore that not only was the August output far ahead of any month this year but it was also approaching the record level for all time.

Judging from the reports relative to the growing activity in the market and the expansion of operations at mills, September production is likely to be even in excess of that in August. Many in the trade expect the September figures to equal, if not surpass, the record established in July, 1920. Already newsprint production is said to be running neck and neck with that during the boom period two years ago, and it is believed that manufacturers are rapidly increasing their output of other kinds of paper and that at the prevailing rate of production a new record is likely to be established.

Another very encouraging feature of the August report

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

is that mill stocks of paper declined appreciably during that month in spite of the big jump in production. At the beginning of August U. S. mills had a total of 280,660 net tons of paper in stock, and at the end of August these holdings had been reduced to 264,420 net tons, showing a decrease of 16,180 net tons. This means that manufacturers not only shipped out all of the 635,107 tons of paper produced during the month but also a good part of their surplus holdings, shipments from mills aggregating 651,287 net tons for the month.

The newsprint market is strong. Demand shows no let-up, mills are running at capacity output and are shipping out their product about as rapidly as it becomes available. Newspapers in New York probably have consumed more newsprint this week than in any week in their history. The bankers' convention along with the world's baseball series have resulted in record-sized issues, and in some cases publishers have been unable to print all of the advertising offered them. One of the morning newspapers has printed a 48-page issue several days, while the afternoon papers have been putting out issues ranging up to 36 and 40 pages.

The book paper market is showing increasing strength. Demand is on the rise and prices are stiffening. Coarse papers are moving in larger quantity which is the usual thing in this branch of the paper market at this time of the year. Tissues are firm and in steady demand. Fine papers are fairly active. The movement of bonds and ledgers is increasing at a slower pace than other kinds of paper but there is nevertheless expanding activity in this division of the industry, and quotations on fine papers show a hardening trend.

Box boards of all descriptions are moving in large amounts and at rising prices. No further change of note occurred this week in quotations but prices are strong at a level of $60 per ton on plain chip board and $62.50 on filled news board, and consumers are meeting these prices in an effort to cover their requirements. Board mills are understood to have a wealth of business on file and they are gradually increasing their output now that coal is easier to secure, and in view of the continued advance in raw material, many expect a further rise in board values before the year is out.

GROUND WOOD—The Federal Trade Commission's report on the pulp industry for August contains figures which are decidedly bullish for ground wood. Production of ground wood in August fell considerably from that of July, and mill stocks also declined appreciably. At the beginning of August mills held 187,580 net tons of mechanical pulp and at the end of the month mill stocks amounted to 157,515 tons, showing a drop of some 30,000 tons, which is explained by the fact that mills consumed 131,915 net tons during the month and shipped out 8,030 tons, whereas the production in August reached no more than 109,870 net tons. These figures mean that less ground wood is available for consumers, and account in large measure for the very firm price tone now prevailing.

Domestic grinders are quoting $32 to $33 a ton at producing plants for prime spruce ground wood for prompt shipment, and higher prices than these are reported named in some quarters. The delivered consuming mill basis continues in the vicinity of $40 a ton.

CHEMICAL PULP — A firm tone marks quotations on chemical pulps. In fact, there is a strong upward tendency, and sellers frequently are asking higher figures and seem to be obtaining the rates named without much difficulty, thus indicating that papermakers are in need of pulp and are paying asked prices to cover their requirements. Bleached sulphite is particularly firm. Sales of foreign No. 1 bleached at 4.75 cents a pound ex the dock New York have been reported, and it is understood that domestic producers are securing advanced prices of 5 to 5.25 cents a pound for their No. 1 pulp. Imported No. 1 unbleached sulphite has sold at 2.95 cents a pound on the dock, and foreign easy bleaching sulphite is quoted up to 3.25 cents. Kraft pulp is quotably strong with importers asking around 2.75 cents per pound for No. 1 Swedish kraft, and domestic and Canadian producers between 3 and 3.25 cents at pulp mills.

RAGS. — The market for papermaking rags rules firm. There have been some reports of felt manufacturers having let up in their buying of low grades of rags, yet prices hold steady and dealers insist that they cannot afford to book orders at cheaper prices because of the firm maintenance of values at collection centres and in packing circles. Also it is argued that rags are not coming forward from country sections in normal amounts and that higher prices therefore must be secured for the supplies that are available. Indications are that paper mills have bought fairly freely during the past several months and that in a majority of cases they have their requirements well covered for a time, which doubtless accounts for the slower demand reported in some quarters.

No. 1 roofing rags are selling at around 1.45 cents a pound f. o. b. New York and No. 2 packing at an average of 1.35 cents, with foreign dark cottons bringing in the vicinity of 1.30 cents per pound ex dock this city. New cuttings hold steady in price, and dealers report getting around 11.50 cents a pound f. o. b. New York for No. 1 white shirt cuttings. Old whites are quotably steady and demand for thirds and blues is moderate, with dealers quoting about 2.25 cents a pound for repacked blues and 1.75 cents for miscellaneous packing such as are used by blotting paper and fibre mills.

PAPER STOCK — The market for old paper is exceedingly strong. Active demand for this commodity is a reflection of brisk operations of paper board mills, and it is stated that consumers are paying stiff prices for supplies—in frequent cases prices so high that they are out of proportion with those prevailing on finished material. Low grades of waste paper, chiefly used by board mills, are particularly active. No. 1 mixed paper has sold in excess of 1.30 cents a pound f. o. b. New York this week, and folded newspapers have fetched 1.40 cents f. o. b. this city. Book stock is strongly quoted at around 2.70 cents for No. 1 heavy magazines, and about 2.20 cents for mixed books. Shavings hold firm and sales to mills up to 4.50 cents for No. 1 hard white shavings at dealers' shipping points, and at 3.90 cents for No. 1 soft white shavings have been noted.

OLD ROPE AND BAGGING. — Old manila rope is steady in price at from 6 cents per pound upward at dealers' shipping points for No. 1 domestic rope. Old bagging is showing a little more life and quotations hold firm at around 1.25 cents for No. 1 scrap and one cent a pound for roofing bagging f. o. b. New York. An encouraging feature in old bagging is that tissue paper manufacturers are beginning to show increased buying interest.

HEAT INJURES FELTS

Hot weather is detrimental to felts. Warm water injures them and causes them to stretch and sometimes fills up the pores. Hence they should be kept where it is cool, and the coldest available water supply should be used on the paper-machines.

Let the mule do the kicking.

With the Woodsmen

WISE FORESTRY POLICY

Switzerland today reaps the benefits of her wise policy of forestry pursued for hundreds of years. Out of every 100 square miles of territory, says the current number of the *Canadian Forestry Magazine,* 17 are covered with forests. The municipal forest of Zurich, famous throughout the world, has been producing timber continuously during the last 600 years. Crop after crop has ben grown and marketed and new crops started. It is a common saying in Europe that "Switzerland holds her mountains up and her taxes down" with her forests. These forests, largely municipal, protect farms and towns by preventing landslides. In addition they pay dividends which materially reduce tax levies. Moreover, it is her forests, as well as her mountains, which make the men of Switzerland strong and self-reliant. It is her forests, too, which help to attract and charm tourists.

U. S. DEPENDS ON CANADA FOR BOTH PULP WOOD AND NEWSPRINT

Although the United States leads in the production of newsprint paper, the Canadian mills are growing rapidly, writes John Matthews, jr., chief of the paper division of the U. S. Department of Commerce, in the current issue of commerce reports. There was a marked increase in Canadian production during the first half of 1922, as compared with the corresponding months of 1921. Canada during the 1921 period produced 373,988 tons, as against 615,448 tons produced in the United States, and in the corresponding period for 1922, 516,506 tons as against 690,142 tons in the United States. This shows an increase of 38 per cent. in Canadian production and 12 per cent. in American. Canadian shipments for the first half of 1922 increased 43 per cent. over the corresponding period in 1921, whereas shipments from American mills increased only 13 per cent. These figures leave no doubt about the growing competition from Canada. In the United States very little has been done in the way of additional equipment for the manufacture of newsprint, whereas in Canada a number of the large mills have greatly increased their productive capacity, and, with one of the largest American producers opening a mill in Canada, it would seem that eventually this large industry will be transferred to Canada.

If the newsprint industry is to be kept alive in the United States, the main problem is, without question, the supply of pulp wood. It would perhaps be impossible for anyone to make a definite statement as to the total American resources, but it is certain that the supply in the eastern and lake states is inadequate. About 30 per cent. of the newsprint manufacturing industry is in New England, 50 per cent. in New York, and 15 per cent. in the lake regions, and in this district, as a whole, the annual cut of pulp wood greatly exceeds the forest growth. In other words, in this district there are mills without forests, whereas in the western states and Alaska there are forests with a practically unlimited supply without adequate production facilities.

The cost of transportation prohibits bringing western pulp wood to eastern mills. Naturally, the newsprint industry will be expanded in the western territory, but the principal consumers are in the east and middle west, and look for their supplies from eastern mills. Western mills can not compete with eastern Canadian mills because of the difference in transportation costs. This makes the United States very largely dependent on Canada for its supply of pulp wood as well as newsprint paper; this has taken place within a comparatively few years for it was not until 1905 that this country began importing pulp wood. In 1920 the total import of pulp wood and pulp into the United States represented 35 per cent. of the total American consumption. During the same year 730,000 tons of newsprint paper were imported.

Imports of pulp wood and wood pulp into the United States from Canada and other countries, also pulp wood imports from Canada during the past few years are given below. Imports of pulp wood from countries other than Canada were so small as to be negligible.

Imports of wood pulp and pulp wood follow:

	Wood Pulp From Canada. Tons.	Wood Pulp Other countries. Tons.	Pulp Wood From Canada. Cords.
*1910-'14	247,122	291,288	976,296
1918	510,424	5,834	1,370,027
1919	463,582	104,290	1,047,299
1920	584,950	224,244	1,236,693
1921	359,684	262,727	1,081,634
x1922	244,808	190,761	476,589

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* Average.

x First half.

These facts show the urgent necessity of a survey of American resources in pulp wood and a definite programme for reforestation in the eastern and lake states. Reforestation can not overcome the immediate difficulties, as it would take many years to put the United States on a self supplying basis.

GENERAL PRODUCTS CATALOGUE

The Pulp and Paper Magazine has received a copy of the new 230 page General Products Catalogue, Form 9207, which the Canadian Ingersoll-Rand Co., has just been compiled.

This is the first large general catalogue they have issued for some years, and is rather unique in some respects. It is subdivided into fifteen sections, fourteen of which are devoted to some particular class of product and the fifteenth to a collection of tables, formulas, etc., for the use of engineers. The pulp and paper section is, of course, particularly interesting.

It contains about three hundred halftone illustrations and is of an improved form of loose leaf construction permitting the replacement of certain pages or sections when necessary.

This catalogue is obviously not intended for promiscuous distribution, but the company will be glad to send copies to any responsible readers of this paper on request.

TALLEST CHIMNEY IN OTTAWA DISTRICT

The J. R. Booth Company, Limited, Ottawa, is planning the erection of a new chimney, which, when completed, will be the tallest chimney in the Ottawa district, and will take a prominent place among the highest stacks in Canada. The proposed structure is to be 276 feet high, and will cost in the neighborhood of $15,000.

The new chimney is to be constructed on a concrete base 22 feet square and fifty feet high. The foundation will reach to a depth of eight feet below the ground surface. The tall column above the base will be of brick construction.

President McKinley

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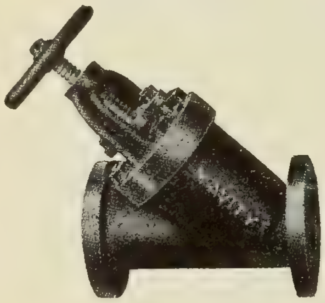

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EDITORIAL

KEEP THEM WARM

The climate around Haileybury and Cobalt, Ont., is not tempered by surrounding forests as it used to be before man's greed and carelessness sold the big timber and destroyed the rest. The people in this district are now principally farmers, miners and townsmen. A number of flourishing communities have sprung up. Several of these were entirely wiped out by the fires that swept the country-side two weeks ago.

When winter comes, and even now, as snow has already fallen in Cobalt, the families made homeless by the fire will be sadly in need of shelter and warm clothing. The government of Quebec has sent lumber, tar paper and nails to help the towns in this province that suffered. Generous aid in many forms has come forth from Toronto and other centres in immediate response to the calls for help.

Many paper mills have doubtless already made contributions in one form or another. We would submit for the earnest consideration of all mill managers the suggestion that worn press felts be sent to the Northern Ontario Relief Committee at Toronto. They can then be readily cut into convenient sizes and distributed to the best advantage. A couple of felts from each mill would keep a lot of people from suffering with cold this winter.

* * *

As has just been said, the response to appeals for aid has been very generous, but we can not help wondering, and worrying too, as to whether those who gave money, clothing, etc., have given a moment's thought to measures for preventing the recurrence of such a disaster. We venture to say that no district in the world has such a concentration of irresponsible darn fools to the square mile — in respect to fires and forests — as there are in Ontario, and particularly in the District of Temiskaming. About once in two years there is a big fire in that country. Altogether, something like 200 lives have been lost, not to mention the destruction of private property, schools, churches, etc., and timber resources beyond computation.

The people of Ontario are asleep, sound asleep, criminally irresponsible for and indifferent to the duty of protecting the lives of fellow Canadians and conserving the only natural resource that can possibly provide employment for both the land and the people of many districts.

What are you going to do about it, Neighbors? You can do as much as Quebec and New Brunswick. You can do more and better if you will. For God's sake do something and do it now.

WHY PRICES ARE CLIMBING

Prices are strengthening on all grades of pulp and paper and increases are recorded in certain lines. Canadian mills are taking orders for newsprint at $75 for delivery in the first half of 1923. The largest American manufacturer has been quoting this price for several months. Book paper prices have also advanced and others are sure to follow. Higher prices are in force for both chemical and mechanical pulps.

We notice that some financial writers are prone to interpret the whole increase in price as additional profit, but such is not the case. From conversations with mill managers it is evident that most of the advance is consumed in meeting increased costs of manufacture and gives little if any margin toward much needed relief from financial pressure. For instance, one large book paper mill in the States finds that only in August did they pass the profit and loss line and, in view of the fact that they had to operate at a loss in order to operate at all, for months past, it will take them approximately two years, with the small margin of profit now available, to balance those losses. We wonder how many employees realize what they owe to careful and considerate management in the way of any work at all for more than a year.

Wages were severely cut in some directions. With the recovering of business, wages are coming gradually back, as they should. The general industrial recuperation has brought greater demand for both products and raw materials, and this, with increase in wages, from woods to warehouse, has necessitated an upward revision of prices. Coal and wood, the basis of Canada's industry, are both costing more today than they did last summer. And wood is likely to go higher yet. It is worth more to start with, and it costs more to get out.

So it will be seen that increased price is not necessarily increased profit.

WHAT ABOUT THE BANQUET?

We are going to "speak out in meeting". Some people connected with the pulp and paper industry will remember that a convention was held in Montreal last January. Incidental thereto a banquet was held, in respect to which the recollection of some may be a bit hazy. The banquet was the crowning event of Paper Week. It might have been an occasion to be proud of. Among the speakers were: a minister of the Government of Canada, a

Canon of the Church who had served his country well in the Great War, and a journalist of high repute. The location of the head table had been altered in an attempt to put the hoped-to-be calming influence of the speakers more nearly in the midst of the hall. It didn't work. Not one of the speakers got a decent hearing. One of them had to address himself to "Mr. President and those at the adjacent tables."

The situation was a lamentable contrast to the delightful luncheon in the same room, the same day, and attended, for the most part, by the same people. Everybody knows what the trouble was, and fairly definitely who the disturbers were. And they were not altogether, nor even principally, the persons incidentally connected with the industry who happened to be present. There is no use "passing the buck" or making excuses. The fact is that the banquet last year — and the year before, also, was not a credit to the Canadian Pulp and Paper Industry. It is time to put this event back in the happy position it held during war time, when it was a fitting climax to Paper Week and a real inspiration to those connected with the Industry.

We have two suggestions to make; either hold the convention next January in Toronto, or arrange for a Cabaret affair somewhere not within a half mile of the Ritz for those who insist on boozing at the banquet and causing a disturbance.

COBWEBS

Some people of Quebec are talking a lot about the public works that are being paid for out of profits on booze, saying the people are not paying for it in taxes. What crazy nonsense! Who pays for the booze? Is not the profit that pays the Liquor Commission and for their stores and salesmen, as well as the roads and bridges included in the price the consumer pays? Those who don't drink should properly appreciate this generous contribution of the boozer to the improvement of the community.

(Contributed)

The Hon. J. A. Robb, Minister of Trade and Commerce, will sail from Vancouver on October 20 for Australia to continue the negotiations with the Australian Government for a reciprocal trade agreement with Canada. This is of great importance to our paper manufacturers, who at present come within the classification of foreigners so far as the duties on their products are concerned. We desire an arrangement which will give us preferential treatment, which of course will have to be a reciprocal character. This would give Canadian paper makers an opportunity to extend their present business, which is of fair volume. Our claim to be placed on the same basis as British manufacturers in the matter of preference is surely a reasonable one. We have no wish to remain in the category of foreign nations, when we are trading with a sister Dominion within the Empire.

Paper manufacturers have plenty of troubles and worries nowadays; but all the same they can thank their stars that they were not born a few hundred years ago. W. A. Nivling, in a recent article on the "Use of Starch in Paper Manufacture," informs us that "Early manufacturers of hand made sheets of paper from cotton and linen were completely sized in one operation by dipping the sheets into solutions of starch." Lucky present-day makers don't have to be engine sized!

CANADIAN COURAGE

New York Evening Post Says: American dollars went to a discount in Montrea on Wednesday, being quoted at $1.006. The momenthm that Canadian thrift put behind the Canadian dollar carried it above par. But economic law will tend to correct this finor differential, and for all practical purposes the two dollars will probably be exchangeable upon an equality from this on. The United States and Canada are economically one in spite of the silly and mischeivous tariff barrier between them. Return of the Canadian dollar to par and better within four years of the close of the war in which the Dominion gave glorio both men and credit is proof of Canada's steadiness and strength. Canada never had the post-war illusion that peace would automatically bring great and lasting prosperity. Other nations, ours included, suffered from post-war fevers, hot flashes of economic madness in which hope triumphed over experience. Canada escaped that hectic experience. With the exception of the serious syndicalist strike at Winnipeg, which was crushed, Canadian labor took the post-war readjustment in good heart. Both labor and capital addressed themselves to production: financiers kept their heads and their courage: the nation proceeded to dig itself out of its financial hole as bravely as the Canadian soldiery had dug themselves in at Ypres.

PULP AND PAPER REVIEW

A wealth of interesting and useful information reflecting exhaustive and painstaking research and compilation. is to be found in the Pulp and Paper Section of the lattest issue of the Financial Post. The issue has attracted particular interest in Montreal owing to the concentration on this market of Canadian pulp and paper securities. Current data and statistics covering every phase of the industry are presented in a comprehensive manner. The section which occupies 16 pages contains contributions from Edward Beck and A. E. Cadman, of the Canadian Pulp and Paper Association, and George M. Mckee, who recently resigned as president of that organization. There is also an article on the pulpwood resources of Quebec by R. O. Sweezey, and another by Thos. W. Ross, president of the Pulp Manufacturers' Association.

ONE ON THE EDITOR

Some one dared us to tell this one—at the Detroit meeting of the T. A. P. P. I. last week, the editor went to breakfast with two good friends and the three hats were checked. The morning was full of meetings and after lunch the other two left at once to visit a mill. The editor was told that the others tooks three hats: A look in their room brought no hat. Train time came and a friend kindly lent a cap.

When the train was well under way, the editor felt for his ticket and pulled out the hat check! Now what do you think of that?

Scandinavian Competition In Amerca

Introduction

The industries throughout Europe are so influenced today by rapidly changing economic and political conditions that it is a difficult matter to reflect accurately what we consider is competition as between a particular industry of this country and Europe. In a short address of this kind it seems as if it will be better to try and present a fairly accurate picture of conditions in the pulp and paper industry of Scandinavia as they were observed the past summer. This picture may then be placed over against a picture of existing conditions in the paper industry in this country, which you have so accurately in your own minds today, and you may then draw conclusions as to competition. There will be a few actual references to competition and the final conclusion of the address should be kept in mind constantly as you go over the picture which is, of course, inadequately drawn. This conclusion is that Scandinavia is getting ready to produce more pulp and paper rather than less, and this very readiness is going to make her keener to meet competition here for our markets and to meet us wherever we are seeking to get into foreign markets.

I. What we Know of the Pulp and Paper Industry in Scandinavia

What any group of manufacturers know of what is being done in foreign countries in producing products similar to their own, had depended largely in the past upon whether these manufacturers have bought, for practical use or experimental purposes, machinery used in their industry, or whether the industry has definitely accepted the idea of manufacturing for foreign markets. The extent to which members of an industry have visited foreign manufacturing plants is not an indication of the knowledge which that industry has of the same industry in other countries. The reason for this last is that in most cases, trips taken by manufacturers to Europe have been taken for only in part business purposes and what these manufacturers have learned as to their own industry has been used for individual advantage, and rightly so.

In a few cases where competition with foreign manufacturers of the same product has been especially keen, or where there has been a definite effort to get into foreign markets, careful investigations of foreign manufacturing methods have been carried out which have made our manufacturers very familiar with foreign conditions. This careful investigation of foreign methods of manufacturing has been made in a very few cases only, and then usually in a confidential way that has not allowed giving the results of the investigation any publicity.

World economic conditions since the War would seem to indicate that our manufacturers must begin a much more systematic study of the industries of Europe and especially of means used by those industries in developing foreign markets. So far as known, only one phase of foreign paper manufacturing has been studied at all fully, and the report upon this study has not been made public.

The paper industry is so organized in this country and there is so large a capital involved in the successful handling of a mill that it is absolutely necessary for mills to run continuously for given periods if there is to be any profit at all. Foreign pulp and paper manufacturers (and Canada is here considered as a foreign country) are making such aggressive and effective efforts to not only come into our own markets, but to secure the markets of the world, that the outstanding conviction that has come as a result of trying to get better acquainted with Scandinavia the past summer is that the paper industry of the United States should get over its idea of self-sufficiency and not only make accurate and complete studies of foreign manufacturing methods whlch may be used for the entire industry, but a definite campaign should be outlined looking to doubling the sale of American paper in foreign markets. If without any unified efforts and without a definite campaign we could export in 1920 more than $90,000,000 worth of pulp and paper, and in 1921 more than $50,000,000 it would seem apparent that there is a tremendous opportunity to put our own industry onto a more profitable basis by gradually increasing our annual exports. Seeing what is going on in Scandinavia makes one surprised that the paper industry of this country seems to be less interested in foreign trade development than any one of the other industries.

II. Why Scandinavia is a Great Pulp and Paper Producing Territory

When any section of a great country like ours is producing some particular commodity in a large way, or when any single country becomes a great producer of a definite commodity it is usually a simple matter to determine why this particular product can be put onto the market a little more economically and effectively than it can be put onto the market in some other section. The chief factor back of such ability to produce is a permanent supply of reasonably cheap raw materials, than comes accessibility to cheap transportation, available power and labor. The one big natural resource giving raw material to industry in Scandinavia (and the Republic of Finland is included in this discussion of Scandinavia) is wood. This raw material is backed up by accessibility to cheap transportation and by satisfactory power and labor. The Scandinavian countries are essentially forest countries. There is comparatively little of mineral wealth. Agricultural resources are limited. The location of these countries however, their climate, soil, and waterways all make for a wealth of forest. For centuries almost, Scandinavia has been the woodyard of Europe, and the Scandinavians have come to understand that the forest is their greatest resource and that if they are to live and prosper, they must make the forest serve them in an increasingly effective way. Naturally, as a new forest country is opened up it gives to the world, first heavy timbers, lumber, and other forms of unworked wood, then, with development comes the use of the raw material at home. Very gradually Scandinavia has been supplying less of wood direct and more of the products of wood. Beginning with Norway and working Eastward, we see today Norway exporting comparatively little wood, less pulp than she used to export and over against this — more paper. Sweden, with a better forest than Norway is still exporting large quantities of wood. She will increase her export of pulp for some little time until pulp mills gradually develop paper mills that the raw product may be worked up and sold in the form of a finished product. Finland, which is even more of a forest country than Sweden, will continue for a longer time than Sweden to export wood, but she too in time will turn more of the wood into pulp and gradually more of the pulp into paper. Going still further Eastward, we will see with the reorganization of Russia which may come in

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* Address by Dr. Hugh P. Baker, American Paper and Pulp Association at Fourth Fall Business Conference, Chicago, Illinois, October 19, 1922.

ten years, or twice ten years than her tremendous wealth of forest will make Russia the Wood exporting country of Europe, and she will continue so for a long time because of the low average intelligence of her people and her lack of financial means.

The Scandinavian manufacturer looks at his pulp or paper mill through the forest while the manufacturer in this country looks at the forest, if at all, through the mill. Whenever the question as to the rating of a mill is brought up in Scandinavia, the first comeback is as to the quantity of a timberland owned by the mill and the accessibility of that timberland to the mill; then the buildings are described and the financial rating of the owners given. In this country when the rating of a mill is in question, usually the first reference is to the character of the plant, then as to capacity and financial standing of the owners. This development of the attitude of the Scandinavian to the pulp and paper industry has come slowly and it has made for a feeling of permanency in the industry which is too generally lacking in the industry in this country.

Just as a self-contained mill with forest holdings in this country has a definite advantage over the converting mill without timberlands, so the Scandinavians with well-organized and productive forests have the advantage generally over this country where our forests are only moderately productive and where our present methods of utilization are causing the forests to recede each year a greater distance from the mill. Some of the paper mills of this country which are entirely dependent upon others for their raw materials, have seemed to show some annoyance at the idea, which has been kept before, them, that the question of a permanent supply of reasonably cheap raw material for the industry is the most vital question confronting the industry. When after all a permanent supply of raw material is the most fundamental factor in the success of any manufacturing industry, it is a little difficult to appreciate why any efforts to improve raw material conditions could be looked at with annoyance by any group of manufacturers.

It would be out of place to discuss in a paper of this kind the question of forestry as it is practised in Scandinavia. It should be understood thoroughly, however, that the practice of forestry is to the forest as the practice of agriculture is to the soil. It means simply the businesslike handling of any forest in such a way as to maintain and increase productivity. The forests mean proportionately more to Scandinavia than they do to this country because we are blessed with so many other great natural resources that we hanven't been forced as the Scandinavians have been to use sensible and businesslike methods in caring for our remaining forests and providing for new forests. The very life of the Scandinavian people depends on the sensible handling of their forests so that it is very difficult for the Scandinavian manufacturer or banker to understand why we are not handling our forests in the same businesslike way in which they are handling theirs. Just as sure as that the woodpile is the foundation of the paper industry, it is certain that the paper industry must take an active part, if not leadership,-in the big constructive work ahead of this country in maintaining our remaining forests and making reasonably productive the idle forest lands everywhere about us.

III. Scandinavia's Advantages in the Manufacture of Pulp and Paper

Scandinavia is not only a land of forest, and a forest in which the trees are particularly adapted to pulp manufacture, but these countries are literally a network of rivers and lakes. Sweden, particularly, is so favored with water courses that pulp mills at the mouths of rivers north of Stockholm can cut timber on the boundary between Sweden and Norway and float this timber a hundred or two miles directly to the mill. That is, the rivers of Sweden generally rise in the mountainous ridge between Norway and Sweden and flow Eastward to the Baltic waters. Furthermore, the large rivers north of Stockholm particularly are of such depth that ocean going steamers can load with timber or pulp or paper and can then go directly to ports of shipment in Southern Europe or North of South America. Finland is equally a country of lakes and rivers. Many of the Finnish lakes are so connected that rafts of logs can be towed hundreds of miles from the forests directly to the saw mill or pulp mill. There is a great deal of undeveloped water power in all of these countries and power development is being finished. This is particularly necessary because coal is lacking and to be independent of foreign coal these countries must develop electric power or use wood for fuel. Finland is today using wood almost entirely as fuel on railroads, in industrial plants and for domestic use. Even so, English coal can be laid down at the mills in Sweden at prices below the cost of bituminous coal at our own mills in New England or Michigan or Wisconsin.

The cost of raw materials to the mills in Scandinavia are surprisingly near the cost of the same materials to our own mills. However, with cheaper labor and cheaper transportation, and in many cases with greater efficiency in the use of materials, these Scandinavian mills have a decided advantage over our own pulp producing mills. Take the kraft pulp industry for instance. We are using on an average of 500 pounds of salt cake to the ton of kraft pulp. with the use of sulphur, and, of course, this saving is in- The average in Sweden is at least 100 pounds less. So creased by savings effected in regaining spent liquors in manufacture of alcohol, and in other ways.

Generally speaking, the cost of common labor is less than 50 per cent. of the cost of common labor in this country. Because labor is more effectively organized, Sweden being practically a closed shop, it is probable that more labor is employed to do the same amount of work and there might be some questions to relative efficiency. It is quite possible that Scandinavian labor generally is less efficient than American labor, although their skilled labor is generally or very high quality. As indicated in the Supplement to the Monthly Bulletin of the Association, which is being distributed today, every pulp and paper manufacturer in Sweden must enter into labor agreements, first with the central labor organization in Stockholm, and then with the local labor organization. Common labor controls the Swedish labor organizations where in this country our labor organizations are controlled generally by the skilled men. The effect in Scandiavia is a leveling down process which in a way benefits the common labor, but hits the skilled labor very hard. There seems to be little question but that this situation is decreasing the efficiency of labor generally. It must take away the incentive for a common laborer to become skilled and of course it presents a difficult problem to the employer in creating a body of skilled men. It was suggested rather generally in Scandinavia that we are probably headed into much the same labor arrangements as exist over there. Women are employed much more generally in the paper industry of Scandinavia than in this country. This is particularly true of Finland where women are employed on almost every piece of work where men are employed, all the way from the sorting booms on the rivers through the pulp and paper mills to the shipping departments.

Counteracting somewhat the apparent difficult labor situation, there has been an unusual development of technical men-purposely or otherwise. The keen competition existing between the smaller countries of Northern Europe and the absolute necessity for securing foreign markets, has forced manufacturers to use every possible means to increase the efficiency of production and mill control. It would appear from the mills visited that there are technical men in control of almost every operation, from trained foresters in the woods through to the last process in the mill. It is of tremendous importance to us to appreciate that necessity has driven our Scandinavian competitors to such a development. In too many cases in this country the business depression of the past eighteen months caused manufacturers to scrap the technical and the woodland departments. More difficult times and keener competition might bring us to an absolute reverse action in those matters, that is, to increasing the efficiency of the technical and woods departments rather than scrapping them.

It was constantly surprising to find that very many technical men in Swedish and Finnish Mills not only speak English but have been in America and know thoroughly of our conditions. There are today in our American mills a number of Scandinavian technical men who are here temporarily and who will go back to the industry on the other side. Possibly this action can be ascribed again to the keen competition which Scandinavian manufacturers are facing, but it would appear to be a move in the right direction, whatever the cause. The industry in this country could well afford to send yearly or periodically a number of our honest technical men to visit and to work in Scandinavian mills. From contact with the leading manufacturers of Swenden and Finland, it would appear that there would be no difficulty in securing opportunity for our technical men to get thoroughly in touch with Scandinavian mills.

IV. Scandinavia's Advantages in the Merchandising of Paper

An interesting difference in the development of the paper industry in recent years in the United States and in Scandinavia is that our own mills have been developed almost entirely with the idea of supplying our domestic markets only. Generally speaking, the idea of manufacturing paper for foreign market has been given secondary consideration. The mills of Scandinavia have on the other hand generally been developed with the idea of supplying foreign paper markets and therefore every attention has been paid to becoming acquainted with the needs of foreign markets and every effort has been bent to satisfy those needs. The extent to which efforts are made to satisfy the foreign market was shown in the case of one of the larger Swedish mills which holds a technical man in readiness to go out for instructional purposes wherever there is a possibility of supplying a particular kind of product. This same man is sent out if there is fault found with the pulp produced by this mill with the idea that quality has been so firmly established that if a foreign mill has difficulties with pulp it is up to the producer to show how that pulp can be handled to the greatest possible advantage. In other words, the tendency is for some of the Swedish mills to give technical instruction, in a sense, where pulp is being sent out in quantities.

Reference has been made several times to the necessity for market which has forced Scandinavian manufacturers to come together on common problems. One of the biggest of these common problems has been the marketing of pulp and paper. Unlike this country, the Scandinavian countries do not have the legal restraint which faces our manufacturers, in combining to fix prices, restrict production or divide territory. It would appear that the governments over there are more than ready to step in and help foreign manufacturers in doing some of the things which our manufacturers are forbidden to do by federal law. Generally speaking, this freedom of activity has been very advantageous, to the Scandinavian manufacturers. At times, such freedom may legislate against the manufacturer however. It is possible that the close union of Swedish pulp manufacturers which was in existence when the period of depression began some eighteen months ago, led those manufacturers to maintain their high prices for too long a period of time. They might have liquidated and returned to healthier business activities months earlier if such a combination had not been in existence. That is, there may be dangers both in the direction of too great a freedom granted by governments to organize or in the direction of too little freedom for organization.

High standards of workmanship and pride in the industry have doubless had much to do with the development of quality products particularly in Swedish pulps. However these factors alone would not maintain quality. The necessity for meeting tremendous Canadian competition and for getting into our markets in a satisfactory way has lead the Scandinavians to strive for quality.

In striving for quality, efforts have doubtless been made to study our needs and to meet our needs in an effective way, both as to character of product and as to the way the product could be laid down most satisfactorily at our mills, or to our merchants. That is, the Scandinavian countries manufacturing pulp and paper for outside consumption, have of necessity been forced to learn these conditions in outside countries where we have not as yet felt any need of learning of conditions outside of our own country. Doubtless, when we deliberately seek to supply a foreign market, we will with equal aggressiveness learn the demands of that market and the people to whom we are selling.

The fact that it has been possible for Scandinavian manufacturers to come together in associations and unions and that these associations have been able to go to lengths not legal in this counrty, has made association activities play a much larger part in the industry over there than is the case in this country: It is perfectly human for a manufacturer to support an organization which promises to give him value received and that liberally, for what is put into the organization. Yet, the fact that the Scandinavian manufacturer has had to work closely with others in his association has, it seems given him a little broader view of the needs of the entire industry, and there is today a keen appreciation of the fact that what benefits the entire industry benefits the individual and in a way that the individual will rise or fall as the group rises or falls. We are some years behind the Scandinavian manufacturers in the appreciation of desirability of group action. It is coming slowly with us but we must in a way face some of the necessities for very existence which the Scandinavians have faced before we are going to act together as effectively as they are in the solution of marketing and other problems.

The men who make up the pulp and paper industry in Scandinavia are neither better nor worse than the men who make up the industry of this country. They have gone through much the same development as men and are putting much the same thought and energy into their activities. If anything, their training has been more difficult and there are rather more strenuous efforts constantly required to maintain themselves and their industry in a profitable condition. The necessity we are going to feel in a tremendous way is competition for our own markets as well as for the markets of the world. Scandinavia is getting ready to produce more pulp and paper rather than less and that very readiness is going to make her keener to meet competition here for our markets and to meet us wherever we are seeking to get into foreign markets. All of this means that we have much to gain from keeping in close touch with the Scandinavian industry and in getting better acquainted with the men who are maintaining that industry. There is more in every way to be gained from friendly rivalry than from the bitter fith that has often gone on the past among men making up the same industry in different countries.

DOES IT PAY TO ADMIT VISITORS?

The policy of various companies regarding the admittance of salesmen and other interested visitors, varies according to the mental make-up and attitude of the men who control their destinies. Various reasons are given for not allowing visitors. In a few cases some untimely accident or event has happened to influence the policy of keeping out every one but employes. Some visitor has either met with an accident in the plant or an employe has been hurt while a visitor was within, and promptly the closed-door policy was inaugurated. In the majority of cases, however, the real reason, when sifted down, is chiefly a matter or selfishness or fear, or both. It is a matter of selfishness with the ideas, methods and perhaps some mechanical devices in use in the plant. Some of these may have been originated in the plant, others copied from other establishments, and then a fence built around them, so to speak, to offset all possibility of some one carrying away the idea and giving it to a competitor. No account seems to be taken of the fact that others engaged in the same line are possessed of brains, or have money to employ bright minds to develop ideas and methods of reducing costs, improving the product and increasing production.

Picture for a moment the spectacle of one plant shutting itself up and hoarding its own ideas and methods, while a number of others maintain the glad-hand and open-door policy to visitors interested and well-informed in their line of manufacture. In the latter case there is bound to be a wide exchange of ideas, and what is there that contributes more toward advancement, education and general progress than the broadening of knowledge through an exchange of ideas? Money's value is realized through exchange, never by hoarding; so it is with ideas.

In the course of conversations with plant visitors the management obtains a slant on how others get results, how others have found the causes of various troubles and applied remedies. It has an opportunity to learn how its own facilities compare with those of other concerns, and through this information learns its own weakness and finds where and how to strengthen and improve existing methods and equipment. The concerns learns all this at no cost, by an open-door polisy, whereas it might otherwise go on blindly in false security — in the blind belief that its own facilities excel those of all concerns in competitive or related lines of manufacture.

There is nothing that contributes more toward making one grow stale and lose interest than sameness — that deadly unnatractive sameness in surroundings and associates — and that is just the condition that prevails in the plant with a closed-door policy. — The Pulp Press.

Enthusiasm is the headlight on the train of progress.

QUEBEC STREAMS COMMISSION

The work of the Quebec Streams Commission is of interest to the pulp and paper industry, in relation to the water powers for the development of electrical energy for operating the mills and also the supply of water for driving the logs. In the annual report, just published, it is stated that a plan is under consideration for largely increasing the water storage on Lake Kenogami, in the Lake St. John district, in order to improve the water powers on the River aux Sables and on the River Chicoutimi, and thus enable the full electrical power to be available during the entire year. The powers on the River aux Sables are used by Price Brothers to operate the pulp and paper mills at Kenogami and Jonquieres, while the Chicoutimi Company Company use the powers on the Chicoutimi River for their pulp mills at Chicoutimi.

The St. Maurice River Boom and Driving Association has charge of the driving of logs from Weymontachingue to the St. Lawrence, paying the Commission for water supplied. The cost of the driving is divided between the owners proportionately to the number of logs dealt with and the distance. In the spring, when the water is high, the dams are closed and the intensity of the floods is decreased, and the logs float in a channel more restricted than it would be under natural conditions. The wood does not float into the bays and over the low lands. On the other hand, the level of the water recedes faster than it does under natural conditions, and it becomes necessary to supply water from the Commission's dam. This control makes the driving of logs much easier and more certain. It is suggested that the association should control the driving above Weymontachinque as well— the entire length of the river—and thus secure more cooperation, a better use of the water, and the adjustment of claims for water.

On the St. Francis River last year 34 booms, each containing 700,000 feet of pulpwood, were sluiced, at an average of 258,000 feet per hour.

The Commission has had under consideration the development of falls on the River Escoumains, on the north shore of the St. Lawrence. The limits on the watershed contain a large amount of pulpwood. The Laurentide Company own considerable limits in the district. Pulpwood logs are cut at Escoumains and floated to wharves through a sluice about half a mile long. The Saguenay Lumber Company is cutting timber to a distance of 45 miles from the river.

On the River Franquelin, 215 miles below Quebec, the Franquelin Lumber Company is carrying out pulpwood operations. A dam has been built at the mouth of the river to hold the pulpwood, a dock of 735 feet has been constructed, and boats drawing 15 feet can reach it any time. A water sluice 5,600 feet long, a pipe line 2,500 feet long to supply the water to the sluice, a sawmill, and camps have been constructed. The company propose to build a dam which would flood the first drop in the second falls.

The Commission has discussed with the Abitibi Power and Pulp Company the question of the storage of water in Lake Abitibi, and the engineers suggest the creation of reservoirs on the tributaries of the lake in order to improve the situation.

Mr. Graewin, of the famous Holmensbruk mill, in Sweden, was a visitor in Montreal last week.

The Future of Research in Papermaking

By JOHN STEVENS, 3d

Pulp and Paper Department, Arthur D. Little, Inc.

(In Chemical and Metallurgical Engineering: Reprinted from the Paper Mill)

In the past ten years chemical progress in the manufacture of paper, the processes of which are so often thought of as being of a purely mechanical nature, has been exceeded in no other industry, and stands as a striking example of the value of chemical control and research when applied in an intelligent manner. In fact, it was no more than six years ago that one of our largest paper corporations, operating seven mills, possessed as its chemical staff one graduate chemist assisted by a boy to conduct such routine tests as were at that time considered sufficient to maintain the highest degree of efficiency! Today this same manufacturer has a staff of fifty chemists and engineers in addition to a small army of laboratory assistants whose duties consist of testing not only everything that enters into a product but the condition of the product in its various stages of manufacture as well. There can be only one result of such a drastic change of policy—an unprecedented standardization of heretofore rule-of-thumb methods coupled with the development of new processes, revealed through chemical research, which have made great strides, particularly toward an efficient recovery of valuable by-products.

Chemical Control vs. Research

The work of the chemist in the paper industry has up to the present time, therefore, been concerned largely with the control of existing processes together with research in the by-product field. It is now quite apparent, however, that there are an infinite number of problems which remain unsolved and upon which the chemist must bend his efforts in the future. The fact that they exist reflects in no way upon the ability of the paper chemist, as it should be realized that his time has been occupied largely by the control of present processes; with a few exceptions, he has not been able to carry on extensive research. Many of the larger manufacturers have maintained research laboratories in addition to those devoted primarily to process control, but such development has been comparatively recent and has not had the opportunity, due largely to the short lapse of time, to demonstrate fully the wisdom of such a step.

On the other hand, the results obtained at the Brown Company under the guidance of such men as Moore and Richter should certainly serve as conclusive evidence that research in the pulp and paper industry is of infinite value. The utilization of waste sulphite liquor and the recovery of various by-products from the gases and liquors of the alkaline pulp processes have occupied a prominent position for some time and considerable research has been devoted to these problems.

In view of present circumstances in the paper industry, however, it appears that the chief concern of the research chemist and engineer in the future should be directed to the study of fibrous raw materials and how best to prepare them, in an economic way, to take the place of our rapidly vanishing timber resources, together with a study of possible improvements in existing processes.

By-Product Possibilities and Wastes

The wastes incident to the conversion of wood into paper pulp are not confined wholly to the loss of non-fibrous constituents, which in the past have either gone into the sewer or been utilized for their fuel value, but a large part of these wastes are the result of careless cooking conditions and inefficient methods of handling the product. It is not at all uncommon to find a mill realizing a 38 per cent. yield of pulp when a 43 pr cent. yield would surely result from slight variations in the cooking schedule; but what is even more distressing is to see fully 10 tons of valuable pulp lost in the back waters for every 100 tons of paper made. Such a state of affairs emphasizes the fact that the enormous demand for paper is not the only reason for the depletion of our forest reserves, but that wasteful treatment of materials within the mills themselves is partly responsible. Furthermore, a 10 per cent. saving in pulp would be far more profitable to the manufacturer than the recovery of by-products has proved to be up to the present time. Has not the time therefore arrived for those in charge of scientific development in the paper mills to regard the treatment of the fibrous raw material, both as to source and as to process of manufacture, as of equal importance with by-product recovery?

Reduction of Power Consumption

At this writing a great deal of promising research is being carried on in this and other fields and many of the most fundamental processes in paper manufacturer are due for a rude jolt in the very near future. Much of this late development, such as the drying of paper continuously in a vacuum and improved methods of beating the pulp, is of largely mechanical nature, although none the less important, and will contribute as much as any chemical achievements to the advancement of the industry.

Furthermore, the processes of beating and drying are largely responsible for the enormous consumption of power in the paper mill, and anything that can be done to save this valuable commodity is well worth the expenditure of considerable research. Take the matter of beating, for example; why should it be necessary to circulate pulp, say, 1,500 pounds to a beater load, for five hours or more to effect the proper hydration for manufacture into papers requiring this quality, and in an apparatus which requires from 50 to 60 horse power throughout the operation? Surely there must be some simpler way, and an excellent opportunity is offered to the chemist, with his knowledge of the hydration of cellulose, to co-operate with the mechanical engineer in the design of more efficient equipment to effect this end.

Very similar to present beating practice is the manner in which pulp is ordinarily washed, particularly in the manufacture of high grade papers. Here the half stuff circulates around in washing engines of the same general shape and design as the Hollander beater, except for the fact that the beater roll and bed plate are supplanted by a paddlewheel to cause the motion of the stock. Fresh water is added continuously and the dirty water leaves at the same rate through the trunnions of several perforated washing drums that dip into the pulp.

More Efficient Washing

To those familiar with the methods of washing in other industries this practice must appear queer indeed. This is not at all surprising, as after all such an operation is virtually a dilution process and does not represent in any way the correct principle of displacement used in other industries. What the paper makers need in regard to washing is a method by which the dirty washings are successively removed from the pulp previous to their displacement by clean water. This method is, of course, used in pulp mills for the removal of bleach residues, but its application throughout the trade is still limited and is open for future development.

Vacuum Drying

The drying of paper is still another of the more or less mechanical processes in the paper mill which presents excellent possibilities for investigation. There are three main considerations in regard to the problem of drying—namely, the amount of steam used, the temperature of the steam, and the temperature difference between the steam and the paper. It is common knowledge that 50 per cent. of the steam supplied to present drying systems is lost. This fact alone should warrant an extensive investigation of methods to improve this condition. It is also known that high temperatures are particularly injurious to the strength and quality of papers. This requires that in any improved process of drying the temperature of the steam must not be raised above that already found suitable.

We now come to the question of temperature difference, which governs largely the speed at which paper dries. The drying of paper in the atmosphere with steam at 5.3 pounds pressure within the dryers will give a temperature difference of only 16 deg.—that is, the difference between the temperature of the steam, 228 deg. F., and the temperature at which the water in the paper is boiled off, or 212 deg. F. Let us see what will happen if this same paper were dried in a vacuum of 28 inches of mercury using steam in the dryers at the same pressure. The boiling point of water under a 28 inch vacuum is 100 deg. F., so the temperature difference is now 128 instead of 16. This means that the paper will be dried 128 ÷ 16, or eight times as quickly under the vacuum as under atmospheric pressure, and, furthermore, at a lower temperature. Therefore, one-eighth the number of dryers in the ordinary atmospheric system would do the same amount of work and effect a considerable saving in steam at the same time, if placed under a 28 inch vacuum. Such a vacuum drying system is being developed and is an indication that the future may look to many revolutionary changes in paper drying.

Sulphite Process and New Pulp Materials

It is in regard to the utilization of fibrous materials, however, that chemical research can best be applied in the immediate future in the pulp and paper industry, and it is with this end in view that the few suggestions that appear here are written. It is when this point is reached that it becomes evident that the future of paper pulp manufacture centers largely around the so called sulphate process. It so happens that practically all of the new materials now being introduced to the paper trade, such as waste cotton fiber, sugar cane, bamboo, etc., are best adapted to this process and open up at once a fertile field for research. Curiously enough, it has been found that bamboo, so treated, will yield a remarkably easy bleaching pulp which is destined to act as an excellent substitute for wood pulps used today.

There are, however, certain to be many problems incident to the introduction of these new materials into commercial practice and no small portion of them will be up to the mill chemist to solve. Many of these fibrous materials do not contain enough ligneous matter to furnish adequate fuel for the burning of the liquors in the recovery process; others contain so much silica that the gelatinous silica compounds formed in contact with the alkaline liquors are bound to interfere with the settling and filtration of the lime sludge in the causticizing process.

These, and many other problems relative to the utilization of new materials, have heretofore received too little attention, which has resulted in the publication of many misleading statements. If all of the governing factors, both technical and economic, were carefully considered, it is doubtful whether more than 5 per cent. of the materials proposed would be found suitable for paper manufacture. Too many investigators consider only the quality of the pulp and it never seems to occur to them that digester yield, liquor recovery and location of materials bear an equally important part. Nine times out of ten it has been found by experience that, although a material may produce a most satisfactory pulp, the yield per cubic foot of digester space is only from one-third to one-half that of ordinary pulp woods. This means that a four digester soda mill would have to be turned into probably a ten digester mill to obtain the same production from some of these new materials. It requires only simple calculation to reveal the fact that the effect on the annual investment return is quite discouraging.

In connection with the sulphate process itself, without the consideration of its application to new fibrous raw materials, there are many opportunities presented for improvement. A reliable, reasonably durable system of indirect cooking to prevent dilution of liquors is still to be found; there is room for engineering development on tumbling digester trunnion attachments and steam inlet arrangements to prevent leakage; an efficient method of washing the pulp to supplant diffuser systems and further prevent liquor dilution is desired; in the recovery end there is needed a good automatic feed for charging smelters; also chemical research looking toward a more valuable utilization of the various substances contained in the lignin dissolved in black liquors than using them for fuel and evaporating purposes; the disposal of lime sludge is an important problem which should be solved in the immediate future, as many of the mills are now contemplating this step.

Pulp From Southern Pine

The application of the sulphate process to many of our common pulp woods such as the Southern pines should offer possibilities of improvement. It is doubtful, however, if it will ever be practicable to manufacture bleached pulps from extremely pitchy woods, such as the long leaf pine, by this process.

The content of resins in this pine is very high, when consilering it as a pulp wood, but if looked at from the standpoint of the resin and turpentine industry it is too low for economical operation. For example, the stump wood used by the extraction plants often contains 24 per cent. resin, while the pulp wood seldom averages over 5 per cent. There have been attempts in late years to combine the extraction and pulping processes, but up to the present time this has not been successful on a commercial scale. The fact that the wood is prepared by a hog for extraction and that the extracting process removes most of the resins is ample explanation of the failure of previous attempts. Hogged wood cannot be used in the ordinary pulp digesters and black liquors in the sulphate process will not burn off if the resins which constitute a large part of the fuel value are first removed from the wood. It therefore appears that this problem has been attacked from the wrong angle and that there is room for valuable research.

In the first place, the proper sized chip must be determined which will "strike a happy medium" between the ideal hogged wood in the extraction process and the larger chips in the pulping process. It is certain, however, that either one or both of these processes will have to sacrifice something in order to obtain satisfactory operating conditions with a combination of the two. After the resin and turpentine have been removed from the chips, the next logical step seems to be the application of a pulping process that does not require liquor recovery. We are therefore limited to the sulphite process and with certain variations in the cooking conditions from the ordinary practice there is little doubt that a good quality bleachable pulp can be produced. Engineers and designers should also come forward and evolve an apparatus which will allow the extraction and pulping operations to be carried out in the same piece of equipment.

This and other problems, as briefly reviewed in this paper, emphasize the fact that the surface of chemical research in the paper industry has merely been scratched and that myriads of opportunities exist for future development. No doubt the foregoing review of some of the possibilities afforded may be characterized in the same way—there is so much yet to be done and so little mentioned. The conception of the idea is a very small part of the success of the project, however, so that what is now needed is the diligent solution of the many problems and not mere suggestions.

COAL STRIKE AFFECTS PAPER INDUSTRY

How the coal strike has increased the cost of production of paper will be one of the subjects to be discussed at meetings of the paper manufacturers of the country at Chicago during the week of October 16, when the American Paper and Pulp and affiliated Associations will hold their annual fall conference in that city.

A preliminary outline of the situation is given in The Paper and Pulp Industry, the monthly bulletin of the Association to its members, when it is stated that the average coal price to paper mills has increased more than 60 per cent over the prices paid before the strike. Inasmuch as the average consumption of coal in the paper industry is 1.8 tons for every ton of paper produced, the serious condition of the industry is apparent.

"While the outlook for the future has been somewhat dimmed by the coal and rail strikes," continues the Association review of the situation, "the best authorities are all agreed that there will be good business by the first of the year."

Meanwhile, the financial disturbances of the past year have caused a tendency among the mills to study costs carefully, and it is found that the cost of marketing paper has been considerably increased by the small order business which developed during the period of depression. Special cost committees are now at work in the various branches of the industry, through the Cost Association of the industry, while the technical men are studying means of preventing waste, by utilization of what was formerly waste material.

A Vancouver man visiting Manitoba recently wrote home and pinned the stamp to the envelope to show how dry he was.

A LITTLE TALK ON THRIFT

By S. W. STRAUS, President American Society for Thrift

One of the most important phases of thrift practice is the preservation of health. Too often we think of thrift only in terms of money or material resources, but health thrift is of equal importance. This is true because good health adds immeasurably to one's efficiency and capacity for capable work; also the days and years of one's usefulness may be increased through the proper care of one's physical being.

That the span of human life is steadily lengthening is shown by recent statistics. The Massachusetts death rate is used as the basis of these computations because such records have been kept there longer than anywhere else in the country. In 1789 the average length of life in that commonwealth was 35.5 years. By 1855 it had increaased to 40 years. In 1901 it was 47.7 years; in 1910, 52.2 years and in 1921, 52.2 years. Nation-wide reports show that as the result of scientific disease-preventive efforts, the average expectation of life has been lengthened four years during the eleven years.

It has been officially stated that 50 per cent of the deaths in New York State last year resulted from preventable or postponable diseases, thus showing the possibilities that exist for the prolongation of human life.

While much is being done through various state and municipal governments, these results can be greatly enhanced by individual effort. As is the case in financial matters, much depends on attention to details and incessant watchfulness.

The old saying that "an ounce of prevention is worth a pound of cure", has by no means outlived its usefulness.

Thrift of health is a matter upon which much personal attention can be centered to very great advantage. If by living more simply and more sensibly we can greatly increase our daily efficiency and prolong the years of our usefulness it is the part of good thrift to do so.

ON THE WASHING OF FELTS

1. The temperature of the water should not be so hot that a man could not bear his hand in it, that is, not exceed 120 deg., as a higher temperature injures the wool fibres. 2. The quantity of soap varies with the amount of dirt to be removed from the felt and with the size used on the paper. However, enough soap should be used to give good suds. 3. Use soap that rinses out readily. and does not contain strong alkalis, as alkalis will dissolve wool fibre. Varieties of soaps come especially prepared for this purpose, and one of these should be used; but the ordinary soap use about the mill would not be satisfactory for the felt washing purposes. 4. If felts are washed in warm water, it is much better to reduce the temperature of the water gradually while the felts are being rinsed until the natural temperature of the water is reached, as sudden changes in temperature change the original texture of the felt. 5. The felt should not be run in soap more than twenty minutes and rinsed only long enough to wash out the soap, perhaps another twenty minutes.

Good business management require that superintendents, foremen, and machine tenders observe all these precautions. There are times when the great demands for paper products causes sacrifices; but greater production cannot be obtained, however, by being careless about the condition of the machines or in the use of felts and jackets.—Alfelco Facts.

Safe conditions are good but safe men are better.

THE MANUFACTURE OF CARBON PAPER BASE

ERIOGERG

(Translated specially for *Pulp and Paper Magazine* from *La Papeterie* xliv, 109-110, Feb. 10, 1922, by A. Papineau-Couture.)

This grade of paper is made in the same way as waterleaf tissue, but requires much greater care. As one face of the paper is to receive a coating of carbon, it is of the utmost importance that it should be absolutely free from holes, no matter how small. It must be very strong to stand up under the blows of the type of the typewriter, and the formation must be very even in order that the coat of carbon may be of uniform thickness.

Raw Material:— The chief raw material for carbon paper base is hemp cordage. It is cut up into lengths of 8 to 10 cm., and is dusted. It is preferable to put it through the willow both before and after cutting.

Boiling:— Boiling is of the utmost importance in the manufacture of this grade of paper; and when it is improperly conducted the resulting paper is useless for making carbon paper. It is best to use spherical rotary boilers of a maximum capacity of 1,000 kilos. 250 kilos of lime are used for 1000 kilos of ropes. The milk of lime should be carefully screened before charging into the boilers. With a good grade of ropes, free from grease and tar, no soda ash need be added. The boiler should be rotated at about 3 to 4 revolutions per minute, and the pressure should be held at four atmospheres (60 lb.) for 12 hours.

Washing:— After boiling the ropes are washed in a special concrete washer equipped with one or two drums covered with 25 to 30 mesh wire. Practically perfect results are thus obtained, the hot material being more easily freed of the dissolved impurities. Moreover, the loss of fiber is much less than when washing is conducted simultaneously with defibering.

Defibering:— An ordinary engine can be used with 14 to 16 knives in the bedplate. The knives must be bevelled. Defibering lasts about two hours and fifteen minutes. After an hour it is advisable to wash till the water comes through clear, which generally takes about 20 minutes.

Bleaching:— Bleaching is carried out in a beater equipped with a propelling wheel having inclined blades. If the blades are not inclined, the pulp will form into lumps which will be very difficult to get rid of later on. The chlorine consumption is about 5 per cent. and the time about 10 hours. The stock should not be heated and about one liter of sulphuric acid is added towards the end. Washing out the chlorine residues takes about three hours.

Beating:— The stock should be beaten 8 to 10 hours according to the condition of the beater. The fibers should be shortened and hydrated progressively and excessive rise in temperature should be avoided. At the end it is advisable to let the roll right down for about three hours so as to break up completely any lumps which may have formed. The consistency should be about 5 per cent. No size, sulphate of alumina, nor color should be used.

Handling of the Machine:— The sand traps should be large and reversible so that they may be cleaned more easily. The screen plates should have slits 0.4 mm. wide. A 60/180 triple warp wire should be used. The shake should be slow and gentle. The draws should be rather light. As in the case of all thin papers, drying should be slow and gradual. Before reeling, the paper should be damped with steam.

The best furnish consists of 80 to 85 per cent. of boiled and bleached ropes and 20 to 15 per cent. of machine broke. The machine broke can be replaced by clean waterleaf tissue broke. Soiled broke should not be used.

The weight of the paper is generally 17 to 18 grams per square meter. It is delivered in rolls.

The water used in the manufacture of this paper should be very pure and well filtered. It might be well to pass it through a magnetic separator to eliminate suspended particles which might cause holes in the paper.

CHEMICALS AND PAPER MAKING

The pulp and paper industry came in for one entire afternoon on the interesting and varied program of the Eighth Annual Chemical Exposition last month at the Grand Central Palace, New York. A dozen technical papers relating to the industry were read by men actively identified with leading paper manufacturing establishments, and by others engaged in closely associated lines. The latest developments in paper manufacture formed the subject of discussion in the leading talks by the paper men. Eight reels of film illustrating the manufacture of newsprint paper at the Spanish River Pulp and Paper Mills, Limited, in Ontario, were shown. Mr. Walter J. Raybold, President of the American Paper and Pulp Association in a special paper, discussed the close relation between the chemical and paper making industries. He touched upon the important bearing of applied chemistry in the matter of conversion of raw materials. He said that the paper industry has greatly benefited in recent years by the co-operation of manufactures in the exchange of ideas and processes. The old method of keeping secret processes and knowledge, he pointed out, has given way to mutual confidence and co-operation. The display at the exhibit was furnished by about 400 manufacturers of chemicals and equipment and consisted largely of the raw materials and machinery of the various industries controlled or influenced by chemistry. A special section devoted to dye-maknig—a comparatively new industry in America—drew the attention of many of the visitors. A display by the Container Club showed various types of corrugated packing boxes. This exhibit was intended to show shippers how fiber and corrugated boxes are adaptable to the shipping of all types of merchandise. About 50,000 attended the exhibition during the week, and it is estimated that one third of that number represented visitors from all parts of the country.

While the increased popularity of stippled walls has not yet brought about any marked reduction in wall paper sales, sellers of this line admit that they will have something to worry over if the vogue continues to grow. Both the manufacturers and the importers agree that there has been a large increase in building operations this year which would ordinarily increase wall paper sales, but in most cases the volume of their business is no larger than last Fall. The stippling vogue has also made itself felt in another way to the wall paper manufacturers, a good part of their present business being done in light shades of stipple paper that greatly resembles stippled paint. For living rooms subdued tones in tapestry papers are also in active demand.

We notice that new rules for war are to be prepared. How would this do for Rule I? *Thou shalt not fight.*

Lining Sulphate Digesters*

By P. C. AUSTIN
Bathurst Lumber Company, Bathurst, New Brunswick

The lining of sulphate digesters is quite a radical change from previous practice, but the results obtained have been so satisfactory, that it may be of interest to some sulphate mill superintendents.

Having three riveted digesters which we found impossible to keep free from leaks, after having these welded at all joints and rivets, it was decided to try an experiment and put a brick lining in one digester.

The digester was lined in June, 1920, and a bronze sleeve was put in the bottom and a bronze neck in the top also the other necessary fittings for cooking sulphite pulp. This digester was used for cooking sulphite pulp until September, 1920, while the sulphite digester linings were being overhauled.

It was then stripped of all bronze fittings, which were replaced with steel with the exception of the top neck, which we continued to use while cooking sulphate for over a year, when it began to give trouble, owing to the face of the top flange where the cover fits on, getting badly scored, making it hard to get a good joint with a pulp gasket, so the bronze neck was then removed and replaced by a steel one.

The first cook of sulphate pulp was made on October 7, 1920.

The digester was lined by The Stebbins Engineering and Manufacturing Company, of Watertown, N. Y., as follows: Backing to a thickness of one inch of equal proportions of quartz and cement mixed with a solution of silicate of soda. The face brick, single layer of fire-brick on its side, gives a thickness of two and a half inches, giving a total thickness of three and a half inches, set and pointed with the same cement mixture as the backing.

Of course it is well known that caustic liquor used in the sulphate process is destructive to high silica brick, therefore, it is necessary to use a brick of the lowes silica contents. Another point is that the joint material which was used, stands up under the action of the sulphate liquor in a very satisfactory manner, and also this joint material is not expensive, and in fact the whole lining installation for a sulphate digester is considerably cheaper than the lining of a sulphite digester.

Owing to the leaking state of the digesters it was found impossible to cover them with asbestos as an insulator, therefore, the lining, besides stopping the leaks, is also a great help in acting as an insulator, and thereby saving a considerable amount of steam.

A test made in November, 1921, on the lined and unlined digesters was as follows:

Average of six cooks in unlined digesters Number 3 with no covering on the outside.

Steam consumed per digester of 9,580 lbs. air-dry pulp 32,436 lbs.

Steam consumed per lb. of air-dry pulp 3,385 lbs.

Steam consumed per ton of air-dry pulp 6,770 lbs.

Average of six cooks in lined digester Number 2 with no covering on the outside.

Steam consumed per digester of 8,220 lbs. air-dry pulp 26,040 lbs.

Steam consumed per lb. of air-dry pulp 3.168 lbs.

Steam consumed per ton of air-dry pulp 6,336 lbs.

Therefore 6,770 — 6,336 = 434 lbs. of steam per ton of air-dry pulp saved in the lined digester.

The yield was taken over a period of two weeks and it was assumed that the yield of each digester was proportional to the volume. It was found that the yield of air-dry pulp per cubic foot of digester capacity equals 4.455 lbs; so the lined digester, gives a yield of 14.2 percent less than the unlined digester, or in other words the lining occupies about 305 cubic feet of digester space.

The size of the digester unlined is 50 feet 4 inches overall by 8 feet diameter, which figures out at 2,150 cubic feet capacity for the unlined digester against 1,845 cubic feet capacity for the lined digester.

The lined digester made 76 cooks of sulphite pulp and taking this on a basis yield of 3.5 lbs. air-dry pulp per cubic foot then 3.5 × 1,845 ÷ 2,000 equals 3.23 tons air-dry pulp per digester, therefore 76 × 3.23 equals 245 tons air-dry sulphite pulp produced.

The yield of 3.23 tons air-dry sulphite pulp per digester is slightly lower than usually found in regular practice but this was on account of being unable to completely fill this digester with chips when cooking sulphite owing to the steep cone at the top.

This lined digester made 1,151 cooks of sulphate pulp and taking this on a basis yield of 4.445 lbs. air-dry sulphate pulp per cubic foot then 4.445 × 1,845 ÷ 2,000 equals 4.11 tons air-dry sulphate pulp per digester, therefore 1,151 × 4.11 equals 4,730 tons air-dry sulphate pulp produced making a total of 245 + 4,730 equals 4,795 tons of air-dry pulp produced to the end of April, 1922.

The repairs on the digester lining to the end of April have been very small and are as follows: It has been painted twice. The first time was immediately after cooking on sulphite and the second time was during the month of April, 1922. The neck at the top grouted up once and a few new bricks were put in immediately round the bottom outlet which had been worn by friction in blowing.

It has been found that in the bottom and also the top cones, which were put in with a regular digester brick, instead of a firebrick that these have stood up considerably better, so that a digester lined with the right kind of brick made to shape would not only give more capacity to the digester, but also have a longer life. With the 9″ straight firebrick there are too many places where the edges of the brick stand out in making the circle, causing friction, and therefore causing the brick to spaul which would be eliminated in a lining made to shape. This in the writer's opinion could not help but increase the life of the lining.

This lined digester is still in operation and appears to be good for some time yet. It has been in continual use the whole period except when the mill was shut down during the slump period.

Up to the present time there has never been any sign of leak whatever on this digester.

It has been found that this digester will cook slightly faster than the unlined one, with active alkali in the same ratio to its cubical contents, owing of course to the loss by radiation being considerably less.

A point to be considered in the installation of new digesters would be the cost of a welded digester against that of a riveted digester, similar to those used in the sulphite process plus the lining. There would be another saving on a lined digester on the outside covering, which if any were used at all, it would not need to be so thick as on an unlined digester.

This is a point which would have to be gone into more thoroughly at the time of buying.

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*Read at the joint convention of the Cost Association of the Paper Industry and the American Pulp and Paper Mill Superintendent's Association, Kalamazoo, Mich., June 1-3.

PULP AND PAPER NEWS

Speaking at a meeting held in Three Rivers, at which the Hon. J. L. Perron outlined the good roads program of the Provincial Government, Mr. Ellwood Wilson, of the Laurentide Company, Limited, referred to the imperative need of further measures to protect the forests from fire. In this connection he pointed out the possibility of the pulp and paper companies restricting their pulpwood operations in the Three Rivers and Grand'Mère districts unless more stringent protective methods were adopted.

Mr. J. Nuttall of Bentley and Jackson, paper trade engineers, Manchester, England, is on a business visit to Canada.

Mr. Edward Beck, secretary and manager of the Canadian Pulp and Paper Association represented the association at the fall business convention of the American Paper and Pulp Association and affiliated associations, held on October 17-19, at the Drake Hotel, Chicago.

Mr. G. F. Steele, of the Newsprint Corporation, New York, and former manager of the Canadian Export Paper Company, Ltd., Montreal, left New York last week for Christiana, on a business trip. Mr. Steele represents several Scandinavian newsprint mills in the U. S. A.

We regret to learn that Mr. S. Rodier, of the Rolland Paper Company, Limited, Montreal, recently met with a serious accident. In company with two friends he was returning at night in an automobile from the annual dinner of the Laval sur le Lac Golf Club, when the rear portion of the car collided with the concrete buttresses of a bridge. Mr. Rodier was thrown so violently against the side of the car, that he broke six ribs, besides severely hurted his head. He was taken to the Hôtel-Dieu, Montreal, of which he is now a patient. At one time it was feared that the accident would have proved fatal, but Mr. Rodier is now making good progress, although it will be at least two months before he will resume work.

The Canadian Export Paper Company, Limited, has distributed another of a series of publicity folders which are issued from time to time. The latest is entitled "The Exact Science of Paper making." The first paragraph deals briefly with pulp, the following referring to the output of the company.

"Our machines run 23¾ hours each day. During that period the total production amounts to 1,600,000 pounds of paper. This represents a strip of paper one yard wide by 13,680 miles long. The thickness of this strip of paper, however, does not vary one per cent over its entire length. It is the aim of the mills whose product we sell, to maintain the high degree of efficiency which enables them to supply you with 240,000 tons per annum of quality newsprint."

The Riordon Pulp Corporation, Limited, has been incorporated with a capital of $5,000.

At the invitation of the International Paper Company, a party of between 40 and 50 newspaper publishers from the Western States visited the company's mill at Three Rivers, P.Q. The publishers were brought to Montreal by the western manager of the company, and were met there by Mr. Lyman, vice-president. The party were then conveyed in the company's yacht to Three Rivers, where the members inspected the new plant of the company. After that a visit was made to Quebec City, and Ste. Anne de Beaupré, and on returning to Montreal the publishers were given a farewell banquet at the Windsor Hotel. In the course of conversation, some of the publishers expressed appreciation of the point of view of the paper manufacturers in fixing the price for newsprint. The party were greatly impressed with the extent and character of the Three Rivers mill.

An Ontario charter just granted the Marathon Lumber Company, Limited, of Big Wood, Nipissing District, authorizes the company to engage in the manufacture of paper and allied lines. The authorized capital is $40,000 and among the incorporators are Robert S. Robertson, H. M. Smith and R. H. Harstone.

During hearings at Port Arthur of the Gregory Commission it was brought out that the Province of Ontario must provide $348,000 this year to take care of the deficit of Nipigon plant of the Hydro Electric Commission. In the meantime H. A. Alstead, of the Great Lakes Pulp and Paper Company, owned by Wisconsin capitalists, has been waiting since 1919 to make an agreement with Hydro to take about 12,000 h.p. daily. It was stated at the hearing that the failure of the Nipigon Pulp and Paper Company, which is now in bankruptcy, has been a severe blow to the power plant, and Chairman Gregory was surprised to learn that Hydro was still figuring on a return from this insolvent company. The point was emphasized by the chairman that this account may be wiped out to induce new interest to take hold of the plant and put it on a strong basis.

Harry Muir, of the Don Valley Paper Mills, Toronto, has returned to Toronto after several days spent in Montreal on business.

The Rudd Paper Box Company, Limited, Richmond Street, Toronto, are installing a number of safety devices for platen presses in their plant. The device, which is designed to restrain the operator from reaching far enough to get within the danger zone, and at the same time give him freedom for feeding, was invented by R. H. Gold, a machinist, who has taken out Canadian patents and has also applied for American rights.

Toronto bookbinders have been advised that those of the members of the International Brotherhood who were out on strike for several weeks last year, will be paid deferred strike dues about Christmas, now that the funds of the Brotherhood have been increased.

Apart from a few details, the plant of the Don Valley Paper Mills, Limited, Toronto, which was burned last June, is now completely rehabilitated. The plant is operating at full capacity.

George Carruthers, head of the Interlake Tissue Mills, Limited, head office, Toronto, was one of the pall-bearers at the funeral of the late Byron Stauffer, pastor of the City Temple, of which Mr. Carruthers was one of the directors.

Dr. Ross, Industrial Trade Commissioner for Canada in China, and D. B. Sparks, have been in Toronto and Ontario recently negotiating with a number of paper manufacturing concerns with a view to establishing warerooms at Shanghai for the display of samples of Canadian paper and paper products. A number of the Toronto men in the trade were interviewed and it is likely that the Canadian paper industry will be well represented when the Canadian products office is opened in the Chinese city.

J. Nuttall, representing Bentley and Jackson, the well-known paper machine manufacturers in Birmingham, England, was a caller on the Toronto paper trade during the past week.

William Gorman, Montreal manager for the Provincial Paper Mills, Limited, spent a few days at the head office of the company in Toronto during the past week.

L. F. Knickerbocker, the new superintendent of the Provincial Paper Company's new paper mill at Port Arthur, has entered upon his duties. Mr. Knickerbocker is widely known in the paper manufacturing trade largely through his long connection with the Kimberley-Clarke Company. He went direct to the Port Arthur Mill from Niagara, Wisconsin.

The Toronto paper houses have withdrawn their breakage charge recently instituted, of twenty-five per cent, replacing it with a ten per cent charge with a minimum charge of thirty cents, which is 24c net for each breakage. This action was taken at the request of the Toronto Typothetae. Any possibility of unfairness is eliminated by considering assorted colors of one grade or water mark of paper as one break.

NEW BRUNSWICK NEWS

The proposed extension to the Nashwaak Pulp and Paper Company's plant at St. John will not be started until the adequate water supply has been definitely arranged for. Officials of the company have been conferring with the city council of St. John on the matter of the water supply.

A. C. Cogaley of St. Martins has been cutting and peeling pulpwood in Kings and St. John counties and operating a portable mill, cutting laths, near St. Martins, under contract for Thomas Bell of St. John.

P. G. Mahoney of Melrose, N.B., who died recently left an estate valued at $166,000. Most of the estate is in timber lands in Westmorland county, near Melrose. Two sons and three daughters will divide the estate. He was one of the best known lumber operators and dealers in New Brunswick. Included in the estate were two mills. The late lumber man was formerly a member of the New Brunswick House of Assembly.

Prospects are for free movement of lumber from the ports of St. John and Halifax during the fall and winter season. This will be especially true of St. John. During the late summer and fall all of the St. John lumber dealers and manufacturers have been active in the shipment of lumber to Europe, West Indies, Cuba, and the United States. W. Malcolm Mackay, George McKean and Company, Dunfield and Company, Sayre and Nolly, Murray and Gregory, J. S. Gregory, Thomas Bell, Stetson, Cutler Company, Randolph and Baker, J. W. Moore, Charles Miller Estate, F. L. Elkin, all with offices in St. John have been shipping out of St. John this year.

STEAM SCALDED FACE

Scalded by the steam from a blow pit over which he was working at the Temiskaming plant of the Riordon Pulp and Paper Companp, Satursay afternon, Fred Paquette, 24 years old, of 101 Gouin Bolevard, was badly burned about the face and neck.

He was brought to Montreal by the evening train and was taken to the General Hospital.

Paquette stated that he failed to notice that the top was off the blow pit. As he bent over his face was assailed with hot steam from the pit.

BATHURST CO. FINANCE EXTENSIONS

To finance construction of a newsprint mill of fifteen thousand tons annual capacity to be completed by May of next year, and to increase productive capacity of sulphate pulp to 19,500 tons, the Bathurst Company of Bathurst, N.B., has sold to Royal Securities Corporation $1,500,000 of 6½ per cent first mortgage convertible sinking fund gold bonds. Series "B," due June 1, 1941.

The Bathurst Company in 1921 took over the Bathurst Lumber Company, which had been in successful operation for fourteen years. The company manufactures some 30,000 tons of sulphate pulp and approximately 30,000,000 feet of spruce lumber per annum. It's 2,563 square miles, which are estimated to contain 2,000,000,000 of spruce sawlogs and 10,000,000 cords of pulpwood. Timber areas are situated on rivers tributary to Bathurst Harbour, N. B., and the Baie des Chaleurs, Que. The company is one of the largest manufacturing enterprises in Canada. Its plants and hydro-electric development of 9,000 h.p. are of recent construction. At Bathurst the company has its own deepwater docks, from which shipments are made direct to the United States, South America, British West Indies, England and Europe.

Average sales for the last four years totalled over $2,900,000 per annum. Net earnings 1917 to 1920 inclusive averaged $577,778. Last year, in common with other pulp and lumber manufacturers, the company showed a loss after all charges of about $300,000, due to exceptionally adverse market conditions. Due to present improved business conditions, the company's plants are now running full and its current operations are showing a substantial profit.

The bonds are convertible into an equal amount of common shares at any time at the option of the holder, which is an unusually attractive feature of the issue.

The company possesses excellent management and has a very strong directorate, comprising the following, many of whom are well known in manufacturing and business circles in both Canada and the United States: Angus McLean, president, Bathurst, N.B.; A. E. McLean, vice-president, Bathurst, N.B.; M. E. Preisch, vice-president, North Tonawanda, N. Y., president, Haines Lumber Company; John A. Cameron, Ottawa, director, W. C. Edwards & Company, Limited; L. S. DeGraff, North Tonawanda, N. Y., president, State National Bank; Gordon C. Edwards, Ottawa, director, Canada Cement Company, Limited; Cyrus D. Jones, Capitalist, Scranton, Pa.; F. P. Jones, Montreal, president, Canada Cement Company, Limited; Harry L. Jones, Brooklyn, N.Y., president, Jones Brothers Tea Company; P. M. Kirby, Wilkes Barre, Pa., president, Miners Bank; vice-president, Woolworth Company; director, Lehigh Valley Railroad; A. E. Loosen, Bathurst, N.B.; Hugh McLean, Buffalo, N.Y., president, Hugh McLean Lumber Co.; E. S. Peck, Scranton, Pa., general manager, Peck Lumber Manufacturing Co.; director, United States Lumber Co.; F. L. Peck, Scranton, Pa., president, United States Lumber Company.

It is expected that Royal Securities will make public issue of the bonds at an early date, both in Canada and the United States.

A lovely autumn wedding took place at St. Paul's Church, Toronto, last Wednesday afternoon, when Alexandra (Billie), daugther of Mr. and Mrs Alexander Buntin, became the bride of Mr. John A. Boyd, son of Dr. and Mrs Geoffry Boyd.

Technical Section

REVIEW OF RECENT LITERATURE

A-Properties, Chemistry and Testing of Raw Materials and Finished Products

A-2; K-5. The Cooking of Rags. HERMANN GRIMM. **Zellstoff u. Papier**, i, 7-10, 33-56, (1921). Translation by C. J. West in **Paper Trade J.**, lxxiii, No. 16, 32,34, (Oct. 20, 1921); No. 24, 44-46, (Dec. 15, 1921); lxxiv, No. 3, 50-51, (Jan. 19, 1922); No. 8, 50-52, (Feb. 23, 1922). Results of analyses (ash, moisture, furfural, pentosan, ether extract, and alcohol extract) are given for unbleached and bleached cotton, linen, and hemp pulps. In determining the absorptive capacity of the fibers, 10 g. of air-dry material (of known moisture content) were shaken with 1 liter of the alkali for 4 hours, the cellulose was filtered off and the liquor titrated with decinormal hydrochloric acid and methyl orange. The difference between this value and the titration of the fresh liquor gave the amount absorbed. The results show that time plays a role in the absorption, the greatest values being for 4 to 6 hours. The higher the concentration of alkali, the greater the amount absorbed. Stirring during the experiment increases the absorption of lime by cotton, but is unfavorable in the case of other alkalis and fibers. The alkaline earths are markedly absorbed while the alkalies are taken up only in small amounts. Strontia, and especially baryta, are absorbed to a greater extent than lime. In general the absorption seems to increase with the degree of lignification. Cooking experiments in which 5 per cent lime was used showed that 88 per cent of this amount was utilized. Experiments in which the rags and lime were allowed to stand 4 hours before heating gave no better results. The cooking process is incomplete when pressure is not used. The passage of carbon dioxide through the liquor with the idea that the calcium hydrate might be transformed into calcium carbonate and thus rupture the fiber bundles was ineffective. Cooking with sodium carbonate after absorption of lime which would cause formation of caustic soda within the fibres was no more efficient than the ordinary cooking process. The mechanical action of the hollander has a considerable effect on the chemical constituents of the fibers, an effect that cannot be replaced by more severe cooking conditions. Comparative factory experiments with lime and lime-soda cooks were favorable to the former. In testing the quality of pulps the methyl number is valuable but too expensive for a control method. The lignin value is also a criterion of the purity of the cellulose. The relation of total impurities to cellulose may be determined by the acetyl number, since the cellulose forms soluble acetyl derivatives, while the lignified part and other impurities are undissolved. One g. of air-dry material is treated with a mixture of 5 g. of acetic anhydride, 5 g. of acetic acid and 0.15 g. of sulphuric acid (specific gravity 1.84) and allowed to stand 24 hours with frequent shaking during the first 6 hours. The mixture is then diluted with 15 cc. of the acetylating mixture and centrifuged. The height of the precipitate is read on a scale and converted to percent of the original material. A list of 24 references on rag cooking is given.—A. P. -C.

A-3. Bamboo as a Raw Material for Paper Making. W. SCHMELL. **Zellstoff u. Papier**, i, 153-167, 189-200, 210-223, (1921); **Chem. Abs.**, xvi, 828 (March 10, 1922). A complete chemical study of the bamboo fiber, with some observations on its use as a paper making material.—A. P. -C.

A-4;5. Pulp Testing Apparatus. F. M. WILLIAMS. **Paper**, xxvii, No. 10, 86, (Nov. 10, 1920). A description of the Williams Standard Pulp Testing Outfit. (See **Pulp and Paper**, xviii, 80, Jan. 22, 1920.)-A. P. -C.

A-15. Distillation of Methylcellulose under Reduced Pressure. J. REILLY. **Helv. Chim. Acta**, iv, 616-621, (1921); **J. Soc. Chem. Ind.**, xl, 504A, (Aug. 15, 1921). A series of methylated celluloses (Cf. Woodhouse and Denham **J. Soc. Chem. Ind.**, xxxii, 974,1913; xxxiii, 1084, 1914, xl, 211A, 1921) containing 25.3 28l, 33.4 and 45.7 per cent of methoxyl, respectively (and thus corresponding approximately with di- and trimethyl-celluloses) were distilled under 10 to 15 mm. pressure. The most definite results were obtained with the second product, which yielded 50 per cent of methylated derivatives, the most volatile portion of which after suitable purification, had the composition of a dimethyllaevoglucosan and was hydrolyzed to a dimethylglucose. Pictet and Sarasin's conception of the existence of the levo-glucosan group in the cellulose molecule thus recieves further confirmation.—A. P. -C.

D-Mechanical Pulp, Production

D-4. Regulating the Power Required by Grinders. I. R. STANTON. **Paper**, xxvii, No. 10, 178, (Nov. 10, 1920). A brief description of the General Electric Co's pulp grinder load regulator and of its method of action. It consists of a torque motor, a series transformer, and a balanced throttle valve of the piston type, together with accessory globe valves and pipes fittings; and it is installed in the main water line to the grinder.—A. P. -C.

E.-Acid Pulp-Making Processes

E-5. Preventing the Blowing Back of Sulphite Liquor into the Steam Mains. Ger. patent No. 338,554. AKTIEBOLAGET VAPORACKUMULATOR, Stockholm. Same as Can. patent No. 207,708. See this journal, xix, 767, E-5, F-5, July 21, 1921.—H. E .W.

E-5. The Development of Digester Linings. A. F. RICHTER, Stebbins Engineering and Manufacturing Co. **Paper**, xxvii, No. 10, 97, 176, (Nov. 10, 1920). When the sulphite process was first discovered and patented by Tilghman in 1866, the greatest difficulty lay in protecting the digester shell against the action of the acid liquor. Lining with sheet lead was tried out but did not work owing to the difference in the expansion coefficients of steel and lead and to creeping, blistering and buckling of the lead. In 1883 M. E. Pierredon (France,), patented the use Portland cement lining in which were set square blocks of stone or bricks, preferably volvic stone. The joints were about half filled with the portland cement, and the remainder of the joints afterwards filled with melted lead. The greatest improvement since then has been the introduction of the glycerin-litharge cement in 1895. The importance of not subjecting the digester shell to any lower temperature than can be helped is emphasized.—A. P. -C.

E-5; N-6. Superheated Steam in the Pulp and Paper Mill. ROBERT H. WYLD, Power Specialty Co. **Paper,** xxvii, No. 10, 123-124, 268, (Nov. 10, 1920). A description of the economies resulting from the use of superheated steam in power production in the pulp and paper mill, and from its use in sulphite cooking. —A. P. -C.

F-Alkaline Process of Pulp Manufacture

F-1. Rapid Analysis of Sulphate Cooking Liquor. BERGMAN. **Zellstoff u. Papier,** i, 95, (July 1921). See this journal, xix, 698, F-1, June 30, 1921.

F-0. Elimination of Maldorous Substances from the Waste Gases from Sulphate Manufacture. Ger patent No. 319,594, M. G. SCHWALBE, July 31, 1917. The gases are brought in contact with finely divided wood, sawdust, or other vegetable waste product, Mercaptans, etc., may be destroyed before this treatment by mixing the gases with an oxidizing gas such as chlorine, ozone, etc., or the wood or the like may be subsequently treated with oxidizing gas or liquid. A. P. -C.

F-0. Soft. Bleached Pulp by Decomposition of Sodium Chloride. Fr. patent No. 503,749, G. A. MOURLAQUE, March 24, 1920. **Papier,** xxiii, 151-152, (July 1920). The chipped wood is placed in two tile-lined concrete tanks which communicate at the bottom and which are filled with a 5 to 10 per cent sodium chloride solution. After macerating for an hour, the anode is placed in one tank and the cathode in the other, and the solution is electrolyzed. Hydrochloric and hypochlorous acids are liberated at the cathode and caustic soda at the anode. The current is periodically reversed so that the wood is alternately and repeatedly subjected to the action of hydrochloric and hypochlorous acids on the one hand, and of caustic soda on the other. This yields a soft, bleached pulp.—A. P. -C.

H-Bleach Preparation and Process

H-4. Electrolytic Chlorine Cell U. S. Patent No. 1,342,336, P. McDORMAN, assignor to ELECTRO-CHEMICAL CO., June 1, 1920. The apparatus consists of a perforated cylindrical iron cathode, resting in an annular channel in the base member; a cylindrical diaphragm inside of the cathode; a cylindrical graphite anode; an exterior casing; a dome bolted to the body of the cell in such a way as to insulate the anode from the cathode and make the anode and cathode compartments gas tight. Sodium chloride solution enters the cell through a pipe at the bottom. The dome-shaped head permits the level of the electrolyte to rise as the porosity of the diaphragm decreases, thereby ensuring an even flow of liquor through the diaphragm at all times irrespective of the degree of porosity of the latter. The dome also serves as a conductor to the graphite anode, doing away with the copper busbar commonly used.—A. P. -C.

H-4. Electrolytic Chlorine Cell. U. S. Patent No. 1,342,378, JOHN GERSTEE, assignor to ELECTRO-CHEMICAL CO, June 1, 1920. In hypochlorite cells where the hypochlorite is formed near the electrodes, there is a reduction in efficiency due to secondary reactions. At the cathode some of the OCl ions are reduced to Cl ions, while at the anode ClO_3 ions are formed by oxidation. The patent covers the design of a cell in which the chlorine and caustic soda are generated separately and then mixed in baffled chambers so that the hypochlorite formed does not come into contact with the electrodes.—A. P. -C.

H-4. Purification of Brine for Electroylsis U. S. Patent No. 1,342,519, F. C. WHEELER, assignor to BLEACH PROCESS CO., June 8, 1920. In the purification of brine for use in electrolytic cells, the calcium sulphate is usually converted into calcium carbonate by means of soda ash. There is thus formed in the brine an equivalent amount of sodium sulphate which oxidizes the graphite anode during electrolysis and accumulates in the cells until it interferes with the efficient operation of the latter. This sodium sulphate is removed by cooling the impure brine by flowing over pipes containing refrigerated purified brine. The sodium sulphate which crystallizes out adheres to the pipes and has to be removed by a mechanical scraper. The mixture of brine and crystals passes to a settling tank from the bottom of which the crystals are discharged into a centrifugal drier. The cold purified brine serves to cool the impure brine in a preliminary heat exchanger.—A. P. -C.

H-4. The Vorce Electrolytic Cell. Paper, xxvii, No. 10, 236, (Nov. 10, 1920). An enumeration of the merits of the Vorce electrolytic cell.—A. P. -C.

H-5. Apparatus for Bleaching Cellulose with Chlorine. U. S. Patent No. 1,329,824, A. D. BERGLI. **Paper,** xxvi, No. 25, 19-20, (Aug. 25, 1920). The treatment with chlorine is carried out in a closed vessel and then the mass is subjected to a repeated and alternate washing and airing—A. P. -C.

H-5; F-0. Bleaching Pulp with Liquid Chlorine. W. OPFERMANN. **Papierfabr.,** xix, Fest-u. Ausland Heft, 62-65, (1921); **Chem. Abs.,** xv, 2983, (Sept. 10, 1921). The author made a laboratory study of the method of DeVains and Peterson in which the pulp is first treated with chlorine gas and, after washing with alkali, bleached with bleaching powder. The cost varies, as compared with the use of bleaching powder alone, but it averages 60 to 70 per cent of the older method. The author is of the opinion that the older method might be improved by carrying out in steps and washing the product with alkali as an intermediate step. If the liquid chlorine process is put into practice, the question of the formation of hydro-and-oxy-celluloses must be investigated. (Compare DE PERDIGUIER, this journal, xx, 635, July 27, 1922). —A. P. -C.

K-Paper Making and Equipment

K-4. Defibering and De-Inkink Machinery. FRANK C. OVERTON, Castle, Gottheil and Overton. **Paper,** xxvii, No. 10, 128-131, (Nov. 10, 1920). A description of the principal, construction, operation and merits of the Winestock defibering and de-inking machine, together with a diagram showing the operation of the process.—A. P, --C.

K-5. Action of Alaklis and Alkaline Earths on Textile Cellulose (in Rag Boiling). H. GRIMM. **Zellstoff u. Papier,** i, 7-10, 33-56, (1921); **J. Soc. Chem. Ind.,** xl, 653A, (Sept. 30, 1921). A series of constants has been developed for unbleached cotton, unbleached flax, and hemp in the form of raw materials for paper manufacture, and the absorptive power of these materials for caustic alkalis and alkaline earths established. The absorption of lime during the boiling is without influence on the process. Steaming without pressure is insufficient. Injection of carbon dioxide to loosen

(continued on page 912)

UNITED STATES NOTES

The Amrican Writing Paper Company is now operating at 90 per cent of capacity with indications that the paper industry will share the general improvement in business. In a recent survey of the situation the management said in part: "Reports from several printing centers indicate greater activities disposed of, it is reasonable to expect a speedy return to normal business conditions." The report added that general busines already showed definite signs of betterment as a result of settlements of the coal and railroad strikes, and expressed the view that the printing industry was headed for a period of prosperity which would be enhanced by the movements toward elimination of waste and adoption of definite standards in paper.

According to a report received by the Bureau of Foreign and Domestic Commerce, paper enough for the whole world could be made from the bamboo and Savannah grasses of India much cheaper than paper can be made from wood pulp.

The Federal Specifications Board, an inter-departmental board of the Bureau of the Budget has appointed a paper sub-committee which is to standardize departmental specifications. The committee is designated the Technical Committee on Paper and is made up of the following members: F. A. Curtis, chairman, representing the Bureau of Standards; Capt. J. M. Ward Quartermaster Corps, representing the War Department; E. O. Reed, for the Government Printing Office; W. A. E. Doying, representing the Post Office Department; Lt. Commander E. C. Edwards, for the Navy Department; A. B. Butrick, representing the Treasury Department, and F. P. Veitch, representing the Bureau of Chemistry. Recommendations will be made by the sub-committee to the Specifications Board from time to time. Standardize paper specifications for all Government departments may be worked out by the committee which, it is understood, will later admit paper manufacturers to conferences.

Daniel Lewerth, vice-president of Henry Lindenmeyr & Sons, New York, died October 3 after a short illness at his home, Forest Hills, L. I. Mr. Lewerth was 47 years old. He has been identified with the paper trade since his early youth, and had been recognized as an exceptionally well informed paper executive. He was one of the organizers of the firm of Andrews & Lewerth in 1907, but for the greater part of his career, he had been connected with the Lindenmeyr firm with whom he first took up after leaving the public schools. Mr. Lewerth leaves a widow and two children.

Another untimely death of one of the paper industry's prominent members was that of Edward H. Tucker, president of the W. H. Carter Company, who died at his home in Longmeadow, near Springfield, Mass., October 1. Mr. Tucker was for many years a well-known figure in New England's paper trade circles. He is survived by a widow and two daughters.

Owing to the shortage of waste paper it may be necessary for the paper industry to organize its own collection agencies in order to obtain the required supplies. This suggestion has already been made in several quarters, and Dr. Hugh P. Baker, Executive Secretary of the American Paper and pulp Association, mentions the plan as a possibility in a review of the situation. "The difficulty," Dr. Baker stated in a report to the mills last week, "is in part due to the fact that the high cost of collection and transportation leaves only a small margin for the junk collector to pay the housewife. In case the shortage continues indefinitely, it would be necessary for the paper industry to take some means of assuring itself a regular and adequate supply of waste paper, possibly by independent organization of paper collection agencies." The mills are now paying as high as $35 a ton for folded newspapers and considerably more for the magazines and better grades. A contest was put on in Chillicothe, Ohio, among the school children, with a prize for the largest amount of old paper collected in a weeek. While more waste paper was gathered than in the preceeding six months, it was only enough to supply the mills of the locality for five hours.

Announcement has been made that the annual meeting of the Container Club will be held at the Biltmore Hotel, New York City, November 21 and 22. At this gathering, the usual banquet and entertainment features will be omitted from the program, other social features having been held during the club's July meeting at Rye, N. Y.

The D. L. Ward Company, Philadelphia, will reopen an envelope department for the sale of a complete line of envelopes of varied manufacture. The department will be in charge of Norman H. Jenkins who has had years of experience in the envelope business and for long time was identified with the United States Envelope Company.

Next to Cuba, Argentina now leads Latin-American countries as a market for paper and paper products made in the United States. Newsprint is the principal kind of paper imported into Argentina, which has a total annual consumption of 40,000 metric tons, practically all of which is imported. The next paper in demand is known as "papel para obras." This is a machine finish with a high and supercalendered book surface. It is sized for writing purposes, so that it can be used for either printing or writing. Papers made in the United States with a litho finish and supercalendered are similar to this, but they would probably require a slightly harder sizing. Practically all grades of machine finish and supercalendered paper, hard sized for writing, would find a market. The local mills in Argentina make some very good grades, but production is not sufficient to meet the demand.

PAPER USER AND PAPER MAKER

The head of a big newspaper enterprise in discussing the furnish and strength of the paper used for the journal for which he was responsible wanted to specify the weight, thickness and strength of the sheet of paper required for his work and at the same time desired to specify exactly the furnish and the amount of loading to be added. It was pointed out to him that it was open to specify either the weight and strength, leaving the paper maker to use such materials as would produce these results, or on the other hand he could name the furnish and loading; in which case the paper maker would produce the article leaving the strength and weight to take care of themselves.

CONSUMPTION OF NEWSPRINT GOES ON INCREASING

While the newsprint industry was one of the laste to undergo deflation, it has also been one of the first to recover. Consumption is setting up a new high record this year, and should approximate 2,300,000 tons. In 1920, the previous banner year, roughly 2,100,000 tons were used, states the Wall Street Journal.

The U. S. in 1920, a normal year, produced in round figures 1,500,000 tons, Canada 883,000 tons. Canada uses between 100,000 and 125,000 tons of paper at home, and the balance, about 80 per cent. of her output goes to the U. S. Canadian mills have been taking the burden of increased demand. American production in the last five years has varied but little.

Production figures for both countries, seven months to July 31 last, show that output is keeping pace with demand and should continue to though margin of output above requirements may be small next year if demand continues heavy.

Newsprint consumption in seven months of 1922 totalled 1,154,943 tons, compared with 1,019,601 tons in 1921 and 1,029,597 in 1920, the previous record year. While avertising is 2 per cent. ahead of 1921, heavy consumption can be attributed to many circulation campaigns under way by metropolitan dailies. Better business conditions this fall and winter are expected with increased advertising, so that a continuation of the present rate of consumption seems likely.

Production in this country lagged the early months of the year despite increased demand. Chief cause was fact that International Paper Co., our largest producer, carried over into 1922 a heritage of labor troubles which kept half its mills closed. Consequently the Canadian mills reaped the benefit. At present mills in both countries on an average are operating better than 95 per cent. Table showing production for seven months ended July 31, and annual figures follow, in tons:

	1922	1921	1920
U. S. mills (7 mos.)	810,781	709,695	889,477
Canada mills (7 mos.)	606,788	442,832	518,825
U. S. mills (year	......	1,225,000	1,512,000
Canada mills (year)	......	813,000	883,000

Combined output of two countries in seven months of this year was 1,761,931 tons against 1,538,422 in 1920.

Newsprint shipments to this country played to small part in getting the Canadian dollar back on a par with United States currency. While American production has been practically standing still, production in the Dominion has been going ahead by leaps and bounds and this year should approach the 1,000,000 tons mark. International Paper Co. in July opened the first of its mills across the border with a daily capacity of 240 tons.

SHIPPING BY WATER

An interesting development in transportation occurred last week when 1,500 tons of Laurentide newsprint were loaded, under direction of Guy Tombs, Ltd., on S. S. Severance. The shipment was consigned to a big publisher in New York and will make the trip in a week, which is better than could be expected of an all rail shipment just now.

Shipments are going forward regularly by barge from Donnacona for New York. These take 2-3 weeks for the trip. The water route will be open for at least another two months.

Mr. Tombs, when asked about the general freight situation, said things are improving. Canadian paper mills are fairly well fixed for coal and are getting cars for paper. The chief anxiety is in the States, where much of the rolling stock and engines need repairs. The delivery of many new engines early in 1923 should relieve the situation.

ENGLISHMEN WERE GUESTS

An enjoyable luncheon took place at the University Club, Montreal, last Saturday. The guests were Mr. John Wolsternholme, managing director of Chas. W. Walmsley & Co. and Mr. A.A. Richards, mechanical engineer, Major Evans, assistant manager, and Mr. W. J. Ball, assistant superintendent of Edward Lloyd, Ltd., Others present were Mr. William Whyte, Canadian representative of Walmsleys, Mr. T. J. Stevenson of Riordon Sales Corp., Mr. Medbury, Canadian manager of the Westinghouse Co., and Mr. A. S. Christie and Mr. J. N. Stephenson of the Pulp and Paper Magazine. The party later saw part of the McGill-Queens football game.

Mr. Wolstenholme is here to consult with customers for five Walmsley news machines, Bathurst, Price Bros. and Belgo. The two for Bathurst will be 2-roll machines, the two for Price Bros. and the one for Belgo will probably all be 3-roll machines. The marked success of the Abitibi machines has brought the wide machine considerable favor. Walmsley's now have 9 machines in hand. Mr. Wolstenholme is sailing for England this week, and Mr. Wm. Adamson, who was here in 1921 is on his way to Canada.

The delegation from Lloyd's is visiting some of the larger newsprint mills in Canada and the United States. They showed a keen interest in the problems the Technical Section are trying to solve and support the suggestion that pulp should be sold on the bone dry basis.

STRENGTH OF ALUM SOLUTIONS

The following table gives the strength of alum solutions in pounds per gallon for the respective Baume readings at room temperature (70° F.).

Degrees Baume At 70° F.	Pounds of Alum per gallon	Degrees Baume At 70° F.	Pounds of Alum per gallon
5	0.52	16	1.79
6	0.63	17	1.93
7	0.70	18	2.07
8	0.82	19	2.20
9	0.94	20	2.36
10	1.06	21	2.49
11	1.19	22	2.61
12	1.30	23	2.77
13	1.43	24	2.92
14	1.57	25	3.09
15	1.66		

—*Paper.*

A CANADIAN QUOTATION

See how the great old forest vies
With all the glory of the skies,
In streaks without a name;
And leagues on leagues of scarlet spires,
And temples lit with crimson fires,
And palaces of flame!

the fiber is without effect. Boiling with sodium carbonate after preliminary absorption of calcium hydroxide, whereby sodium hydroxide must be formed actually in the fiber, has no more powerful effect than the usual boiling process. The mechanical treatment in the washing and half-stuff hollander exerts a considerable influence on the chemical constituents. Figures are given for the valuation of rag half-stuff prepared on the large scale. Comparisons between lime and lime-caustic soda boils favor the former. —A. P. -C.

K-10. Sizing Paper with Casein, Glue, Etc. Ger-Patent (A) 291,288, (B) 291,229, EXPORTINGENIEURE FUR PAPIER-U. ZELLSTOFFTECHNIK, July 3, 1915. (A) An addition of 2 per cent of caustic soda or of lactic acid (30 per cent on the weight of the dry glue) is made to glue solution to increase its penetrative power. (B) Methylformamide (about 2 per cent on the dry glue) is used to harden the glue or casein. A. P. -C.

K-10. Rosin Sizing. RUDOLF SIEBER. **Zellstoff u. Papier**, i, 139-142, 184-188, (1921); **Chem. Abs.**, xvi, 827, (March 10, 1922). The aqueous solution containing free rosin and the sodium soap is clear only at a concentration of 4 to 5 per cent and within rather narrow temperature ranges; upon dilution there occurs dissociation of the dissolved soap, upon which the rosin separates in the form of fine needles. When the concentration is increased the sodium salt separates forming a jelly. When warm this jelly is mobile, but not when cold. In the action of aluminum sulphate as a precipitating agent for sodium resinate, the dilution plays an important part. It appears that the aluminum resinate once it is isolated is rather stable towards aluminum sulphate. The precipitation product is an unstable product, since when freshly precipitated it is soluble in ether, but when dried 70 per cent goes into solution. This partial insolubility of the resinate in ether may be explained by the fact that the aluminum, is part at least, is in the form of aluminum hydrate, and, therefore, insoluble, but that it holds a large amount of rosin as an adsorption compound which enables it to dissolve in the ether. Hydrochloric acid does not completely dissolve the precipitate, while in the presence of alcohol there is complete decomposition of the product with separation of rosin. The reaction of the salts of hard water with rosin is discussed. With calcium chloride and a concentration of 1 g. of rosin per liter, 0.12 g. are necessary to precipitate the rosin completely. The action of aluminum sulphate on these precipitates is described.—A. P. -C.

K-10; A-12. Use of Waterglass in the Sizing of Paper. TH. E. BLASWEILER. **Paperfabr.**, xix, 809-816, 875-877, (1921). Translation by C. J. West, in **Paper**, xxviii, No. 22, 20; No. 24, 20; xxix, No. 6, 19-20, (1921). A large number of experiments is reported on the sizing of paper with mono-and trisilicate. In all experiments in which trisilicate was used, there was an increase in the tensile strength up to 8.2 per cent and in the case of newsprint of 18.5 per cent based on the unsized product. The greatest retention of filler amounted to 30 per cent of the amount of filler retained in the unfilled paper is never below that of the unsized and unfilled paper. The results also indicate that all waterglass-sized papers possess a greater absorptive capacity both for aqueous solutions and for printer's ink, which is of importance in the printing plant.—A. P. -C.

K-10; A-12. Waterglass and Resins. TH. E. BLASWEILER. **Papierfabr.**, xix, 992-997, 1108-1111, (1921); **Chem. Abs.**, xvi, 492, (Feb. 10, 1922). Reports of tests according to German patent 245,975, (Kuldkepp and Graf) and 257,816 (Sommer). Paper sized with 0.5 per cent rosin saponified with 20 parts of waterglass (6 per cent alum as a precipitating agent) showed a retention of 30 per cent of the silica used, and an increase of 6 per cent in tensile strength Repeated with 20 per cent China clay, the tensile strength decreased 12 per cent and there was a retention of 66 per cent filler. Normal 3 per cent rosin and 20 per cent China clay showed a decrease of about 30 per cent in the tensile strength and a retention of 62 per cent of the filler. When 0.5 per cent rosin and 5 per cent dry waterglass were used (Somer) there was only a slight increase in the tensile strength and a decrease of 0.47 per cent in the stretch. Figures are also given for the absorptive capacity.—A. P. -C.

K-10;A-12. Sizing with Waterglass and Fatty Acids TH. E. BLASWEILER. **Papierfabr.**, xix, 1217-1223 (1921); **Chem. Abs.**, xvi, 492, (Feb. 10, 1922). Experiments with the saponification products of soy-bean and cottonseed oils with and without the use of waterglass do not seem to indicate any great improvement in the properties of the paper. Five per cent cottonseed oil soaps, 5 per cent waterglass (38 deg. Bé), and 10 per cent alum increased the tensile strength somewhat but decreased the stretch.—A. P. -C.

K-12. The Life of Fourdrinier Wires. J. D. WATSON, Wisconsin Wire Works. **Paper**, xxvii, No. 10, 81-83, (Nov. 10, 1920). A description of the manufacture of Fourdrinier wires, of various defects which may be due to manufacture, and of various factors which may shorten its life in the paper mill; together with a plea for the proper designation of the number of a wire according to its mesh.—A. P. -C.

K-12. The Life and Use of Felts. W. S. ROONEY. **Paper**, xxvii, No. 10, 84-85, 186, (Nov. 10, 1920.) A brief description of the manufacture of paper machine felts, with hints as to the proper method of using them so as to get the most service out of them, and a plea for cooperation between felt manufacturers and paper makers and for the standardization of the size of felts.—A. P. C.

K-12. The Farnum Vacuum Roll. **Paper**, xxvii, No. 144, (Nov. 10, 1920). A brief description.—A. P. -C.

K-12. Improved Process of Making Paper. Fr. Patent No. 502,729, SOCIETE CELLULOSE ET PAPIERS. **Papeterie**, xlii, 645-646, (July 25, 1920). The two surfaces of machine-made papers are not identical owing to the fact that they are not both treated in the same manner during the felting of the fibers on the wire. Both faces may be made the same by pouring the stock between two wires which are symmetrical with respect to a given axial horizontal or vertical plane and which travel in the same direction, so that the stock is carried by both wires.—A. P. -C.

K-12. Sectional and Individual Motor Drive. STEPHEN A. STAEGE, General Engineer, Westinghouse Electric and Manufacturing Co. **Paper**, xxvii, No. 10, 74-77, 186, 234, (Nov. 10, 1920). A detailed description of the equipment and method of operation and control of the Westinghouse system of sectional paper machine drive, which consists of an adjustable voltage d.c. generator, with direct connected exciter, a d. c. adjustable speed motor for each section of the machine, suitable means for connecting the motor to each section of the paper machine driving shaft, and a control system which automatically maintains the correct speed of each individual motor, together with push button stations for starting and stopping and adjusting the speed of the paper machine. (See also **Pulp and Paper**, xviii, 616-618, June 10 1920.) — A.P.-C.

K-12. Felting of Fibers on Paper and Cardboard Machines. Fr. Patent No. 498,971. LEON THIRY. **Papeterie**, xlii, 211, (March 10, 1920); **Paper**, xxvi, No. 23, 21, (Aug. 11,1920). Translation by A. Papineau-Couture. See **Pulp and Paper**, xviii, 837, K-12, (Aug. 5, 1920.). —A. P. -C

K-18; R-1. Choosing the Equipment for a Hundred-Ton Straw-Board Mill. RICHARD CLAYTON, Keiffer Paper Mills. **Paper**, xxvii, No. 10, 162, (Nov. 10, 1920). An enumeration of the equipment required for a 100-ton straw-board mill.—A. P. -C.

K-21. Waterproof Roofing Manufacture. U. S. Patent No. 1,305,081, J. P. ELLIOTT. Small particles of a waterproof substance are mixed with pulp and worked in the usual manner to give it the form of boards, which are then treated with a bath of hot waterproof substance, as is done in waterproofing roofing felts.—A. P. -C.

K-21. Machine for Making Composite Shingles. O ALTPETER, G. W. ALTPETER, and F. A. KAISER Can. patent 223,166, (Aug. 29, 1922). A mixture of ashes, granulated slag, or other filler, fibrous material and binder such as asphalt, tar, etc., is delivered hot in a continuous stream from a hopper and passed between sets of spreading and compressing rollers to form a series of wedge-shaped shingles of the same form as ordinary wood shingles.—A. P. -C.

K-23. Method of and Apparatus for Waxing Paper. J. DECKER and A. G. VAN SLUYS, assignors to NASUA GUMMED AND COATED PAPER CO. Can patent 222,903, Aug. 22, 1922. Addition to U. S. A. Patent 1,140,873. The paper is passed through a bath of molten wax, through a (preferably heated) press against (preferably heated) polishing rolls which are driven in the opposite direction to the travel of the paper, through a cold water tank, and finally through a device for removing the surplus water, which consists essentially of two or more suction pipes with or without the aid of doctors and vibrators to agitate the paper as it leaves the water tank.—A. P. -C.

K-23. German Cigarette Papers. W. HERZBERG **Papierfabr.**, xix, Fest-u. Ausland Heft., 35-38, (1921); Chem. Abs., 2984, (Sept. 10, 1921). The results of the investigation of one French and two German cigarette papers are given (color, thickness, weight, tearing strength, ash content, fiber composition, porosity, etc.), and the author concludes that German paper today is better than French paper before the war.—A. P .-C

K-23. Reinforcing and Rendering Paper and Cardboard Impervious. Eng. Patent 139,708, GABRIEL SUTRE. **Paper**, xxvi, No. 22, 24, (Aug. 4, 1920). A layer of impervious material is applied to corrugated paper or cardboard as it is unrolled, and a fabric (woven more or less closely according to the strength required) is applied to the impervious coating before it is dry. The layers are caused to adhere together by pressing the unrolled corrugated paper or cardboard, and the material can then be rewound without waiting for the coating to dry.—A. P. -C.

K-O; R-O. Watermark Substance Number. LOUIS COLTON. **Pulp and Paper**, xx, 582b, (July 13, 1921). A plea for the placing of the substance number immediately under the regular watermark.—A. P. -C

K-0. Keeping Machinery in Condition. K. H COUGHLIN. **Paper Ind.**, iii, 1255-1256, (Dec. 1921). Brief discussion of the necessity of regular inspection of paper mill machinery and of the reduction in the cost of repairs which can be thus effected.—A. P. -C

K-0. Cutting Bleach Cost. L. D. VORCE, Precision Instrument Co. **Paper**, xxvii, No. 10, 42,238, (Nov. 10, 1920). A dicussion of the advantage there is for paper mills to make their own bleach electrolytically instead of buying bleaching powder.—A. P. -C.

L-Articles Produced from Pulp and Paper

L-4. Folding Box Making Machine. L. E. LA BOMBARD. Can. patent 223,093, Aug. 29, 1922. Same as U. S. A. Patent 1,407,331, Feb. 21, 1922. —A. P. -C.

L-4. Paper Box and Paper Box Shell. Can. patent No. 205,679, 205,680, H. B. SMITH, Brooklyn, N. Y., U. S. A., Nov. 16, 1920.—A. P. -C.

L-7. Paper Twine Making Machine. G. S. MILDE and TEXTILITE ENGINEERING CO, LTD. Can. patent 222,695, (Aug. 15,1922). A number of independent strips or ribbons of paper are placed together and in one operation are spun into a cord, with or without strands of other materials, e. g., metal wires —A. P. -C

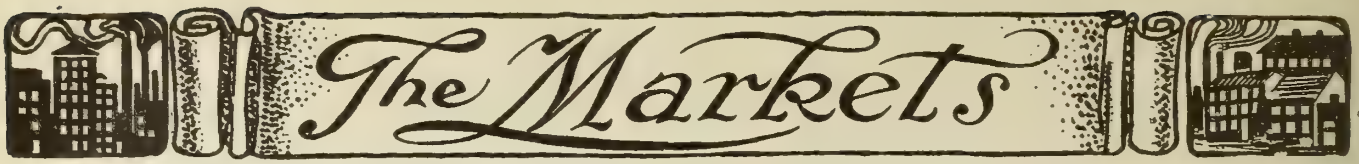
M.-General Equipment

M-11. The Mechanism of Lubrication. 1. ROBERT E. WILSON and DANIEL P. BARNARD, 4th., Mass. Institute of Technology. **J. Soc., Actomotive Eng.**, July 1922; **J. Ind. Eng. Chem.**, xiv, 682-683, (Aug. 1922). In the case of a journal bearing the coefficient of friction (f) is some unknown function of at least nine variables, of which the viscosity of the lubricant at the operating temperature (z), the revolutions per minute (n), and the pressure on the bearing (p) are the most important. If all the observed values of f obtained on a given bearing by varying the load, speed and viscosity of the lubricant are plotted against the modulus **zn/p**, they should approximate a line which represents the unknown functional relationship. A typical figure of such curves is given based on the results of Stribeck using two kinds of bearing metals. The curves consist of a region of perfect fluid film lubrication (f is roughly proportional to **zn/p**), a critical point where the speed or viscosity become so low or the pressure so high that the fluid film begins to rupture, and a sharply rising portion to the left of the critical point which is the region of partial lubrication. Some tentative conclusions drawn from a careful study of available data are put forward.—A. P. -C.

M-0. An analysis of Machinery in the Pulp and Paper Industry. Paper, xxvii, No. 10, 21-3, (Nov. 10, 1920). Tables showing the distribution by states and mills of grinders, digesters, wet machines, washers, boilers, beaters, Jordans, Fourdriniers, and cylinder machines. — AP.-C.

N-Power Generating and Equipment

N-O. The Use of Heat and Power in the Paper Industry. FR. GREWIN: **Svensk Pappers-Tid.**, xxiv, 211-214, 232-233, 251-263, (1921); **Chem. Abs.**, xvi, 645 (Feb. 2, 1922). The layout of a paper mill wih special reference to the drying of bark of pulp, and to the distribution and transmission of heat is shown in 12 diagrams, and the production and use of power by 6 curves. Topics treated are: waste smoke, distribution of steam, production of power, drying of paper, heat and ventilation, and the heat balance, with special reference to utilizing the losses.—A P. -C.



CANADIAN TRADE CONDITIONS

Montreal, October, 7. — The past week has seen some additional advances in prices. While these are to a certain extent, based on rising costs, the improved demand has also been a strong factor in the all round upward tendency. The pulp and paper industry is in a sound condition — business is broadening and with it there are firmer values. There is, of course a danger of pushing up prices to an extent which will reduce consumption, but that danger is very remote in view of recent lessons.

The feature of the week has been the advance of $5 per ton in newsprint by the Canadian Export Paper Company, Limited. This had been expected, and had been foreshadowed in these columns. Apart altogether from the advance in production costs and material, the companies with no doubt took into consideration the hazards to the industry caused by fires, insects, etc. The companies, especially those in Quebec, spend considerable amounts in protecting their limits from fires, but they often suffer from fires which start on neighbouring lands and against which they have no protection. These losses will probably have to be taken more seriously into consideration when fixing the price of paper in future.

The Canadian Export Paper Company have fixed the price at $75 per ton for the first half of 1923, and have already signed several contracts on that basis. The general view is that it would have been a mistake to have set the price at $80 in that it would have tended to cause dissatisfaction and would probably have resulted in a material decrease in consumption. Canadian mills are gradually securing a larger share of the American newsprint business, and it is the desire of our mills to hold it and not to pursue a policy which would create a number of disgruntled customers. The outlook is favorable for a continuation of the good demand which has characterised the last few months. Circulation in the States is upward, advertising is increasing, and the size of the papers is also greater — all causes favorable to an enlarged consumption of newsprint. The immediate point of interest is what effect the action of the Export Company will have on other producers, particularly these in the States. The chances are that other mills will follow the lead of the Export Company, and that we shall see a general advance of $5 per ton.

Montreal jobbers report that business is better, although those who cater to the printers' say that there is slackness in that trade.

Tissues and toilets have advanced 10 per cent., and the cheaper grades of wrapping papers are up $5 per ton. These departments are feeling the effect of the advance in pulps. Boards continue very firm and active. Rags and waste papers are still in very strong demand, while roofing felts are also selling well. The entire market is in good shape with excellent prospects.

Pulps continue their upwards tendency. Groundwood is being bought very freely, in fact, the mills can sell their entire production at advancing values. The St. Maurice Paper Company, Limited, Three Rivers, last week put four additional grinders into operation. Bleached sulphite is being sold up to the limit of production; kraft is in good demand, and sulphite is very firm.

While pulpwood is in much better request, prices show little or no improvement. Pulp and paper companies in Quebec who formerly used to manufacture some lumber, mainly for export, are now turning all their wood into pulpwood. One reason is that the export trade has declined, and another that it is more profitable to manufacture it into paper than to sell it as lumber.

Toronto Paper Markets

Features of the week in the Toronto and Ontario paper markets were a ten per cent rise in the price of tissues and toilets and half a cent increase in the price of several lines of wrapping. There is an upward tendency in most lines of papers and other increases are looked for. Generally speaking the condition of the paper trade throughout the province is satisfactory and a fair volume of business is being done. Book, writing, bond, book, and tissue and toilet mills are all busy and most of them are running to full capacity with orders booked a considerable distance ahead. Gradual improvement is taking place in the jobbing trade and the printing trade, which has been dull for some months, is gradually coming back to its own. There is some prospect of the long drawn-out printers' strike in Toronto being settled shortly and if this takes place it should be a factor in the restoration of normalcy in printing circles.

PULP — There is a general stiffening tendency in all lines of pulp and especially ground wood and soda pulp. Representatives of soda pulp manufacture in Toronto this week stated most of the mills were booked up for a considerable length of time ahead and that there was an excellent demand for the product. Ground wood pulp is now quoted at from $40.00 to $45.00 delivered, and the recent advance of $10.00 a ton in bleached sulphite brings that line up to $100 to $105. f.o.b. shipping point. There are rumors of an intended advance in unbleached. The market for wood pulp has improved considerably, according to Toronto contractors, most of whom are taking on contracts for wood. Prices are now getting down to something near a stabilized basis following the skyward tendency of a year and more ago and there is a steady demand for all the mills are turning out. Peeled spruce and balsam is now quoted at from $10.00 to $13.00, mill prices, and poplar runs at $7.50 to $9.00 per cord. Most of the high-priced wood taken out last year has now been disposed of and local contractors expect a fairly heavy production this year. A fair-sized quantity is in the woods waiting for the snow to facilitate delivery. It is stated that the supply would be somewhat limited if there was any great rush of orders but as it is the demand is just steady enough to absorb the stocks on hand.

WRAPPING PAPERS — Mills and jobbers in the wrapping paper line report a fair volume of business with a fairly keen demand for most lines. Effective Oct. 10 several lines of wrapping went up a quarter of a cent a pound. Rag brown is now quoted at $4.75, car lots $6.25 ton, less $6.50: grey brown, $5.25, $6.25, $7.00: white wrap, $5.50 $6.50 and $7.25: B manila, $5.75, $6.75 and $7.50: Fibre, $6.75 $8.00 and $8.75: kraft m. f. $8.00, $9.50 and $10.25; kraft, m. g., $8.15, $9.65 and $10.40.

BOOK and WRITING PAPER. — Since the rise in prices of these lines both jobbers and manufacturers report sales as holding up well and fair-sized shipments are in active requisition. Book paper mills continue to run full with orders booked up for some months ahead, while contract shipments to publishers are furnishing a lot of business. Jobbers and printers are also using a fair amount, while bonds writings are keeping up well both in price and sales.

COATED BOOK—No advance in coated papers has yet been announced although the coating mills anticipate an increase in view of the upward tendency of paper prices and the mounting costs of raw material. The coating mills, in Ontario, although not running full, report a fair volume of business, with a good outlook for fall trade.

TISSUES and TOILETS.—A general increase of ten per cent on all lines of tissues and toilets into effect this week, but the new list has not yet been issued. These products are in good demand, with both the mills and the jobbers busy.

NEW YORK MARKETS

New York, October 14. — (Special Correspondence). — With the fall of the year at hand, with the effects of the railroad and mine strikes in less evidence, and with general business showing constant and rapid improvement, the paper market is progressing at a rate over which members of the trade express much satisfaction. Demand for all kinds of paper is active and is expanding. Consumers are forgetting all about the matter of price, which was such an important factor in their operations up to a short while ago, and are absorbing paper in large amounts. The result is that jobbers and manufacturers are kept busy supplying the wants of customers, and the industry as a whole is marked by greater activity than has been noted probably at any period since the boom in 1920. Moreover, proof is not wanting that the movement of paper from producing plants is almost direct into consumption. Few consumers, dealers, jobbers or mills are stocking up. Of course normal amounts of paper are carried to guard against emergencies, but there is not indication whatsoever of any promiscuous buying in anticipation of uncertain requirements. Demand is of very healthy character, which is one of the highly gratifying features of the present situation.

With figures for the first eight months of 1922 up to August 31 available, indications point to a record-breaking consumption of newsprint this year which should top by a good margin the 2,000,000 ton smark. Consumption last year, according to Federal Trade Commission figures, was 1,775,483 tons, these figures being compiled from reports of practically all the larger papers which consume about 93 per cent of the standard newsprint used. Consumption in the United States for the eight months to August 31 last was 1,312,598 tons, an increase of 13.9 per cent over the same period in 1921, and also compares with 1,164,796 tons in the corresponding time of 1920, showing an increase of 12.7 per cent; with 1,089,483 tons in 1919, an increase of 20.5 per cent, and with 862,989 tons in 1918, an increase of 52.1 per cent. United States' production of newsprint for the eight months preceding August 31 last was 1,068,295 tons, indicating slightly in excess of 1,500,000 tons for this year. Production in this country varies but little and Canada is taking the burden of increasing consumption by increasing her production. With Canada's output estimated, it is indicated that the combined output of the two countries for the eight months was about 50,000 tons in excess of actual consumption.

HANS LAGERLOEF, President and Treasurer
ORVAR HYLIN, Vice President
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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

The newsprint market continues firm. Publishers are reported taking every pound of paper they have on contract and are frequently augmenting their supplies by placing additional orders. It is stated on high authority that mills in this country have practically every ton of newsprint that they can produce during the remainder of the year sold, which means, of course, that Canada will be looked to fill the gap created by the rising consumption in the States. Apropos of the announcement that the Canadian Export Paper Company had advanced the price of newsprint to contract customers $5 a ton to $75 for deliveries over the first half of 1923, officials of the International Paper Company in this city stated yesterday that no action has as yet been taken in regard to price schedules for the new year. While it is possible that the I. P. may make an advance in the price of newsprint for 1923, it is understood that the company has no desire to do anything that will interfere with the publishers in maintaining their circulation. In other words, the company desires to maintain consumption at present levels, if not higher, and whatever action is taken by the company in regard to price adjustment will be such as not to interfere with the plans of publishers to continue increasing circulation.

Book papers are exhibiting added strength under a prowing demand from cnosuming quarters. Book mills are reported operating at a lively pace and to be finding a ready outlet for their production at steady prices. The tendency of quotations is toward higher levels and it is generally believed in the trade that further advances will be announced shortly. Fine papers are moving well and at firm prices, with low and medium priced qualities of bond and ledger papers mostly wanted. Wrapping papers are active. Despite recent heavy importations, mills making kraft and fibre wrappings are reported running close to capacity and shipping paper as rapidly as it comes off the machines. Tissues also are in good demand and show an advancing price trend.

There is no easing in the board situation. Probably demand has sagged just a little during the past few days, but this does not bother manufacturers as a majority have enough orders on file to keep their plants busy for a month or longer. Prices on boards are firm, and if waste paper goes an yhigher, is more than likely board values will rise in proportion.

GROUND WOOD. — All kinds of wood pulp are strong in price and actively inquired for, and possibly the firmest item in the market is mechanical pulp. Ground wood has been moving so steadily and in such large volume into consumption during the past few months, and consumers have placed orders for such tonnage, that a situation has developed where not much pulp is available for delivery over the next several months. This has acted on prices, and there is a very strong tone to quotations, which seem likely to rise further despite the advance already scored. Domestic grinders are reported frequently asking $35 a ton at producing mills for prime ground wood for prompt shipment, and even up to $40 has been mentioned in some quarters. Canadian ground wood is firming also, and quotations from Nova Scotia and other parts of Canada are reported ranging from $28 to $34 a ton, depending on the location of the producing mills and the tonnage involved. Importers who bring ground wood down to New York from Nova Scotia in schooners say they have sold at $35 a ton ex dock this city, and that they cannot get any more supply to sell at this basis.

CHEMICAL PULP. — Chemical pulps are firmly quoted and the trend of prices is strongly upward. Sellers appear to have matters much to their own liking, demand from consuming quarters being active and available supplies of pulp apparently being limited. Importers in New York are asking around 4.50 cents a pound for No. 1 bleached sulphite, and close to 3 cents per pound for No. 1 unbleached sulphite, with sales actually reported at these figures. Kraft pulp is freely inquired for and is quoted at about 3 cents and up to 3.25 cents for domestic and Canadian pulp, and around 2.80 cents or higher for Scandinavian kraft. Prices at primary centres in Europe are said to be strengthening so rapidly that importers are cautious about entering selling engagements with paper mills in the States, and it is also stated that spot stocks in this country are being rapidly reduced.

RAGS. — The feature of the papermaking rag market this week has been the slowing down of demand for roofing stock. For some reason or another, felt paper manufacturers have not shown as much buying interest as previously, and, as is invariably the case when demand for roofing rags slackens, prices have moved off a little. Dealers, however, express confidence over the situation and argue that there is no reason for any decline at present, it being their idea that mills are far from plentfully supplied and that the prevailing lull in demand is but temporary and will not last. No. 1 roofing rags are now quoted at about 1.35 cents a pound f. o. b. New York and No. 2 packing at 1.25 cents, which represent recessions of about $2 a ton from former prices.

Old whites hold their own in price and seem to be moving in a steady way. There is also a fair call for thirds and blues and twos and blues, and prices on these rags are maintained. New cuttings are somewhat quieter but quotations have undergone no important change. No. 1 white shirt cuttings are quoted at about 11.50 cents per pound at shipping points, white lawns at 10.25 cents, unbleached muslins at 10.50 cents, new light silesias at 7.50 cents, and No. 1 washables at 4.25 cents.

PAPER STOCK. — The market for old paper has ruled a little quieter this week yet prices have shown but slight change. Reports tell of quite a fall in values in the Middle West but New York dealers appear to be sustaining quotations despite a slowing down of demand from board and paper mills. No. 1 mixed paper is quoted at 1.25 to 1.30 cents a pound f. o. b. New York, folded newspapers at 1.40 cents, heavy No. 1 books at 2.70 cents, light books at 2.30 cents, and No. 1 old kraft paper at 2.25 cents. White shavings hold steady at 4.25 to 4.50 cents for No. 1 hard and 2.90 to 3 cents for No. 1 soft.

OLD ROPE AND BAGGING. — Old manila rope is moving in a consistent way and at steady prices, dealers reporting sales of No. 1 domestic rope at around 6 cents per pound at shipping points. Old bagging is in better demand from at least certain quarters than in some time, and about 1.25 cents per pound New York is the price generally asked for No. 1 scrap, and about 95 cents a hundred pounds for roofing bagging.

WHERE THE DOLLAR GOES

The Philadelphia Chamber of Commerce in a recently issued bulletin, gives a basis for the division of the average working man's income. According to their statement each dollar should be divided ni the following ratio:

Food	43 cents
Shelter	18 cents
Clothing	13 cents
Fuel and Light	5 cents
Savings	10 cents
Sundries	11 cents
Total	$1.00

With the Woodsmen

NEXT COMES SLASH!

By Robson Black, Editor Canadian Forestry Magazine

One by one the problems of forest fire prevention are being met and mastered.

The railways, once a major menace to the safety of the forests, have now fallen to a junior rank. This is the joint product of vigilant self-interest on the part of the railway managements, and firm and tractful supervision by the Board of Railway Commissioners. The menace of settlers' land-clearing fires has been cut down materially in all the provinces by the permit system, but notably in Quebec where educational propaganda had especially favorable channels. The menace of the woods traveller, the camper and fisherman, is now being combatted in Quebec and New Brunswick by a permit arrangement similar to that controlling settlers' fires, and with persistence and firmness this source of timber destruction can be largely eliminated.

But something remains.

The forest fire feeds on old slashings, the debris of logging operations. The woods are piled with man-made kindling, ready to multiply a million-fold the spark from a cigarette or camp fire.

Thousands of Canadian industries live on the Forest. Logs must be made or they close their doors. If logs are made, debris follows as a matter of course. If debris follows, then forest fires are just two steps behind. And if forest fires keep their present pace, the industries will find themselves minus their raw material. So runs the vicious circle.

Logging must go on, but a way must be found to destroy logging debris. Many great and successful companies on this continent burn their slash at the time they cut and their profits do not seem to be affected. Obviously as concerns Canada, it is all a question of finding the best method and then of applying it, if at all possible, over a great area such as the forested provinces from the Manitoba boundary eastward. It will not work by patches.

Experiments have been, and are being conducted by the governments in economical disposal of logging slash. The extreme seriousness of the forest fire problem demands that conclusions be reached as early as is physically possible. Slash, however, is next on the programme, and it will call for concession and broad understanding on the part of all woods operators.

U. S. FORESTY NOTES

The New York State Conservation Commission has purchased four new portable fire pumps for the Adirondack section. Each pump will do the work of a crew of seventy-five men on the fire line an at an estimated saving of more than $100 a day. The forest ranger force was increased during the recent dry spell, as many additional rangers as were necessary for fire prevention at the various observation points being added to the Adirondack sections by the district rangers. The increase in the force was authorized by Conservation Commissioner MacDonald.

A summary available from Government records of the five year period from 1916 to 1920 shows timber and property destruction of more than $85,715,000, due to forest fires that burned over an area of 56,500,000 square miles. These figures were brought to public attention by Forest Service officials who appointed out that half the forest fires which occur in early spring and late summer are preventable. In the period cited, 9.8 per cent. of the fires were caused by lightning, 14.9 per cent. by sparks from locomotives, 13.7 per cent. by brush burners, 12.7 per cent. by campers, and 12.5 by incendiaries. While the educational activities of the Forest Service are gradually resulting in fewer fires and less destruction, the decrease is yet slight, it was said, and will continue so until those camping in, or otherwise using, or being in, forests are more careful.

One of the matters coming up for consideration at the Woodlands Section meeting in cago this week will be a proposition urging the establishment of a forest experiment station in the Great Lakes region. Such a station, it is pointed out, would prove useful for the investigation of problems pertaining to the timber used by the Great Lakes pulp mills. The Southern States and the Appalachian mountain region have such stations now New England, also a paper mill region, has been recommended along with the Lake States for an experiment station.

SETTLERS TO BLAME FOR ONTARIO FIRE

New Liskeard, Ont., October 11.— A flight over the fire stricken area which has just been completed by Provincial Forester Zavitz and other provincial Government officials, proves beyond doubt, that this was in no sense a forest fire, but a settlers' fire.

"People who passed through the fire," said Mr. Zavitz, "all remarks the fact that the air was on fire.

"When you consider the speed of the fire, the way towns caught fire as if from spontaneous combustion rather than from contact with flame, it opens up a mysterious problem for the student of fires.

"These settlers' fires, burning gently in peat bogs, and in humus or mould-made largely of conferous vegetable matter, generate a good deal of gas, all of which does not burn.

"Is it possible that great quantities of this gas were lying about this region when the gale blew up, or perhaps, with the hot weather, actually caused a sufficient atmospheric disturbance to create the gale, or were generated in the fire in sufficient quantities to blow of the fire itself?

"This phenomenon is certainly worth looking into. And the residents of these parts may be speaking more accurately than they supposed when they said the air seemed to be on fire."

The western limits of the fire, which till now have been unknown, were discovered to be the strech of the White River known as Long Lake, nine miles to the northwest of Charlton, and Elk Lake on the west.

The fears entertained by the relief forces that the settlers in that remote country beyond these waters might be starving and freezing without hope of help are allayed.

From the head of Lake Temiscaming to a point due east of Englehart the fire crossed the Quebec border and burned as far as the Ottawa River.

The north boundary of the zone is almost a straight line east and west through Englehart, turning slightly north at Charlton and halting at Long Lake. The west border of the fire is these two bodies of water. There is no trace of fire beyond them, where it was feared great areas of valuable forest might have been destroyed.

The south boundary of the zone is a line curving slowly in an easterly and southerly direction to North Cobalt, and then out to Lake Temiscaming.

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XX. GARDENVALE, Que., October 26th, 1922 No. 43

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EDITORIAL

COMPETITION AND COSTS

Last week the *Pulp and Paper Magazine* printed a very informative article by Dr. H. P. Baker, secretary of the American Paper and Pulp Association, on the pulp and paper industry on Scandinavia. While Dr. Baker had in mind particularly the mills in the United States, the lesson that he strove to impress on his own constituency should be pondered by our own managements. Scandinavia is a rival of Canada, rather than of the United States. The latter country is not capable of producing its own paper requirements and is becoming less so. It is a question of who will supply the balance, and for how long. The first is a question of comparative costs and the latter a question of a sound forest policy.

The subject of comparative costs is dealt with in the article in this issue by Mr. T. J. Burke, secretary of the Cost Association of the Paper Industry. Cost, quality, and delivery are the main factors in the placing of business and Canadian mills should be leaders in each respect. Mr. Burke's association is doing fine work in showing the mills how to organize their cost keeping on a comparable basis. Intelligent cost keeping is the basis of fair competition, and that is what is desired among pulp and paper mills. The cause of many cases of price-cutting is undoubtedly a lack of accurate knowledge of costs and expenses. Too many quotations are based on what someone else is charging, or even on what the customer says another concern quotes.

From reports of Scandinavian methods, our friends over there even know what it costs them to grow their trees. We do not even know approximately how many trees we have and we don't dare to estimate the cost per ton of product of our losses by fire, wind and bugs. The newsprint investigation caused a bit of a shake up but there are some signs of back sliding into the old easy ways of "guess and go." We can not afford anything short of an accurate knowledge of costs from the first survey of our timber till the paper is in the customer's warehouse.

HUMAN EFFICIENCY

We are moved, says the editor of the *Journal of Commerce*, by a perusal of Professor E. P. Cathcart's presidential address to the Physiology Section of the British Association meeting at Hull (England) last month, to consider the question of industrial efficiency from a new angle, namely efficiency in its relation to the individual worker.

The address to which we are referring was entitled "The Efficiency of Man and the Factors which Influence It"; and the speaker gave it as his opinion that there were at least four factors which played predominant parts in the attainment of maximum efficiency. These four factors he pronounced to be the following: First, the rate of the performance of work; secondly, the amount of rest offered to, or taken by, the subject; thirdly, the rythm with which the work is performed; and, fourthly, the work habits developed by the worker. These factors are all intimately related, and, in fact, usually merge into one another.

Of the four factors mentioned, it is certain that most attention is usually devoted to the rate of speed at which the work is carried out. Indeed, it is probable that, in this connection, the old adage, "Time is money," has, like a good many other half-truths, been overworked and has been responsible for much false physiology. In Professor Cathcart's opinion, at any rate, the correct stress on the relation of speed to general industrial efficiency is that which is thus laid: "No movement can be compared with another and said to be better than it merely on account of its speed; it should only be compared in respect to ease and final result." If this is right—and we are disposed to think it is—then those who believe that maximum efficiency can be best obtained by mere speeding-up are thinking along wrong lines.

One of the chief sources of general inefficiency among workers is a wrong diet. The inadequately or wrongly fed worker is incapable of the best work. Then the worker is affected by the monotony or fatigue of his work. There is, possibly, a close relationship between monotony and fatigue, but the two are not identical. As regards the former, the temperament of the individual worker plays an enormous part in determining whether a particular operation in a plant is a monotonous one. So far as fatigue is concerned, this is often closely related to several other factors, such as the lighting, heat and ventilation of the plant. For example, in very many plants it will be found that the late afternoon is the most unproductive period of the entire day, and fatigue is the chief reason for this unproductivity, with lack of pure, fresh air as the primary cause of the fatigue. With this question of fatigue, too, the mode of life led by the worker outside his definite hours of labor, his housing and so forth have a good deal to do.

In short, individual industrial efficiency cannot be casually referred to any single factor, for it is dependent upon a multiplicity of factors, most of them, doubtless, more or less correlated. It cannot be said of real industrial efficiency that it means just the mere capacity of the individual to perform so many kilogrammetres of work in a given time with the smallest expenditure of energy. For all who have given thought to the matter realize that it means a good deal more than that. Indeed, as Professor Cathcart puts it, "the quest of efficiency is one of the most intricate problems, in its infinite ramifications of the physiological and sociological structure, which have ever called for solution, and it involves the whole welfare of our race and nation."

As such, it calls for the closest and most intimate cooperation between the scientific investigator, the employer and the employee. In such cooperation, it is obvious that work along the lines of welfare endeavor has an important role to play. The spirit of welfare work is that of goodwill, such as is only possible where employers and employees can get together in good comradeship. Negative goodwill, is of little worth in such a connection. The vital thing is active cooperation. In Canada, we have the plants, the skilled workers and the able direction. But still too largely the spirit of active cooperation is lacking. It can only be satisfactorily secured when mutual distrust of motives, capacities and methods is stilled. We need a larger statesmanship and a truer vision among all those concerned, in whatever capacity, with industrial relationships, not only in their wider national aspects, but in individual firms. And work along the lines of welfare endeavor affords an example as to the method by which not only class antagonisms, but even national antagonisms, may some day be allayed.

VOCATIONAL EDUCATION IN AMERICA

The following generous comment is quoted from The World's Paper Trade Review. It is appreciated by the Editor and the Committee.

No effort is spared by our American friends to extend the knowledge and to improve the methods of pulp and paper manufacture. In this work the technical organizations in Canada and the United States have joined hands with enthusiam. One definite result of this collaboration is the publication of a text-book on modern pulp and paper mill practice under the title of "The Manufacture of Pulp and Paper." The task has been undertaken with vision and executed with thoroughness, and those who study the contents of the five volumes will obtain a substantial understanding of the art of pulp and paper manufacture.

An enormous amount of thought and consideration was given to the scheme, which was not launched until complete plans had been laid and the right men available for their carrying out. The result will be seen in five stout volumes, each running to several hundred pages. Three of the volumes are already published through the McGraw-Hill Book Co., Inc., of New York, who are represented in London by the McGraw-Hill Publishing Co., Ltd., Bouverie-street, E. C. The price of each volume is 30s.

The preparation of the text-book was directed by the Joint Executive on Vocational Education representing the pulp and paper industry of the United States and Canada; and under the editorship of Mr. J. N. Stephenson, some of the best brains of the papermaking industry of America have been concentrated upon this enormous task, which has been brought to successful fruition. While there is a good deal of technical matter in each of the volumes, the utmost care has been taken to render even the intricacies of chemical processes and mechanical engineering to be understood even by the noviciate. To this end, the work has been carefully divided into sections, so that those who wish to take up the study of a particular branch may do so without overburdening their minds in other directions.

Volume 1 is devoted to the following sections: (1) Arithmetic, (2) Elementary Mathematics, (3) Elementary Physics. The manner in which these different subjects have been treated is both interesting and instructive. Volume 2 is devoted to Mechanics and Hydraulics, Elements of Electricity and Elements of Chemistry.

The third volume, which is just published, treats of the preparation of pulp very exhaustively. In Section 1 the subject of the properties of pulp wood is covered from the structure and growth of the wood to the constituents in detail. The preparation of pulp wood has a section to itself, in which all the necessary information is given concerning the cut-up mill and the storage and conveying of the wood. Then we have a comprehensive treatment of the elaborate processes adopted in the manufacture of pulp. For the manufacture of mechanical pulp the various requirements of the mill and the different processes adopted are carefully sketched. In the section set apart for the manufacture of sulphite pulp there is a useful history and outline of the processes followed by a description of the cooking operations, the raw materials used, and, as in every other case, some useful examination questions. A similar scheme is carried out in regard to soda pulp and sulphate. Then in Section 7 the general problem of the treatment of pulp is dealt with, followed by a section on the treating, refining, and testing of pulp, the machinery and the tests applied being fully set ut. The final section is descriptive of the bleaching of pulp, the various agents being specified and useful guidance being given as to the analysis of bleach liquor.

Each volume is copiously illustrated, so that the student can visualise the points made in the text; while a complete index gives the work an added value, specially by reason of the fact that paragraphs are numbered, rendering reference all the more easy.

To sum up, this latest text book of modern pulp and paper mill practice starts at the very beginning of things. The one thought in the minds of those who have been responsible for initiating and carrying out this admirable scheme has been to render the work of real value, even to those of limited education. It will be found equally instructive to those who are already engaged in pulp and paper manufacture, for they will be able to obtain a better understanding of their work; to those who are just entering the industry and have to learn its A.B.C.; and to those who desire to gain an insight into a fascinating and complicated set of processes for any reason whatever.

As has been indicated, this task of preparing the next book has been a colossal one, and it is a tribute to the enthusiam of the promoters that it has been brought so successfully to the point of publication. All who have had any hand in the preparation of the text-book deserve the warm thanks of the industry, not only on the North American continent, but on this side of the Altantic as well,

Manufacturing Efficency and Comparative Conversion Costs

By THOS. J. BURKE. C. A. Secretary Treasurer,
Cost Association of the Paper Industry

Before discussing the advantages to be derived from a study of carefully compiled statistical data showing the "costs" of converting raw materials into finished products, it is necessary to mention two important points which have to be taken into consideration.

1. How far may a trade association go in collecting such data in its efforts to assist its members to produce more efficiently?
2. What is meant by "Comparative Conversion Costs?"

The legal side of the question has been carefully considered and investigated by me and I have no hesitancy in stating that I believe that data collected relating to "Conversion Costs" may be used by a trade association in any way calculated to assist its members in improving their efficiency and thereby reducing the cost of manufacturing their products.

To be absolutely on the safe side, it is perhaps advisable that a list showing each manufacturer's costs should not be published but instead that the "Average Cost" should be ascertained from the figures submitted and this might be published together with the high and the low costs. It should be noted, however, that for some time some associations have been publishing lists actually showing each manufacturer's costs, not only in total but detailed by operations, without apparently any hindrance from the Governmental authorities. No doubt, in time it will be recognized that the publication of such lists can only be for the public good, but at the present stage "Safety First" dictates a fore conservative policy so that not even the most wary manufacturer can have any doubt as to the legality of the work being done bp his association. Therefore, statistics relating only to "Conversion Costs" should be collected, excluding **costs** of raw materials. The **quantities** of raw material used must of course be taken into consideration, which can be done in several ways without actually quoting prices paid therefor.

It will be remembered that the Chairman of the Federal Trade Commission recently in an address advocated agreements among manufacturers "Not to sell below cost." He drew the attention of his hearers to the fact that the elimination of competition by bulk selling below cost was as much against the law as the elimination of competition by price fixing agreements. This fact is often lost sight of by manufacturers and perhaps even by the Government itself. Is it pertinent to this question to ask whether the members of the Joint Committee on Printing at Washington, when they award contracts for the furnishing of paper for the public printing and binding, ever attempt to satisfy themselves that the prices quoted by the successful bidders do not represent "Unfair Competition?" Decidedly, some of us who know something of the cost of making paper would like to know how some of the successful bidders arrived at the prices quoted and whether they expected to make any profit on the transaction. If the members of the Committee do **not** attempt in any way to satisfy themselves on this question of costs, should they not do so?

Proposals must be accompanied by an approved bond equal to 25 % of the estimated amount of the contract and if the contract is not carried out the sureties must pay the Government all damages thereby incurred. I have heard cited cases where substantial sums have been paid on this account. n other words, manufacturers through ignorance or for other reasons, have been heavily penalized for making mistakes. The Committee of course has to "Carry On" under rules laid down by Congress. Manufacturers also have to "Carry On" under rules laid down by Congress. The rules laid down for the Committee are designed with a view to giving **everybody** an opportunity of quoting of quoting for the business. The rules or laws laid down for manufacturers are designed to protect the public. Manufacturers themselves form part of the "Public" and are entitled to protection just as much as other sections of the Public by the laws which forbid selling at a loss for the purpose of destroying competition. It would seem, therefore, that the members of this Committee should be governed just as much by the laws designed for the protection of the public (in this case represented by the manufacturers) as by the rules laid down for their guidance

Why cannot the members of this Committee, in view of Mr. Hoover's statements regarding the necessity for efficient cost systems, at least make a few inquiries as to whether the successful bidders have based their quotations on their "Manufacturing Costs" or whether their quotation has been dictated solely with a desire to discourage all future competition and thus secure a name for being the cheapest manufacturer in that particular grade of paper? Should not the Committee members as representing the Government, set an example to other large purchasers of paper by making inquries as to whether bidders have installed the scientific "Cost Systems" so strongly advocated by another Government Department? I think so, for under the present system it would appear that th Government really obtains paper below cost, which is a situation which should not be allowed to exist on the ground that one section of the public is benefiting at the expense of another. Through Mr. Hoover, the Government has been constantly preaching the necessity for "Manufacturing Efficiency." This Association is fighting for improvement in this respect in the paper industry in the one way best calculated to bring it about, i. e., the adoption of efficient up-to date cost systems. Although we **are** progressing, it does not help us when the Government, acting in its capacity as a buyer of paper, does **not** set an example to other buyers by asking for information as to how the bidders have arrived at their quotation which would encourage these bidders to adopt the suggestions made by the Government acting in its capacity as a builder-up of industry.

Manufacturers have a right to say "Practice what you preach." If you want "Manufacturing Efficiency" encourage it by insisting that those who sell you paper, or anything else, shall prove beyond reasonable doubt that their quotations have been "Built Up" on

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Note:—Although the first part of Mr. Burke's paper deals with a distinctly American problem, there are so many points in it for profitable consideration by any paper maker that all our readers should study it carefully and interpret it in terms of their own experience.—Ed.

scientific methods and do **not** represent merely an attempt to keep their mill running **at any cost.**

If the Committee would go behind the quotations received to the extent of ascertaining whether it were possible to manufacture paper **at a profit** at the prices quoted, it would be a start in the right direction. Most certainly they **ought** to do this. In fact the Committee should not **allow** manufacturers to sell at a loss even if they have given a bond to do so, for thus they are encouraging "Unfair Competition." It is sometimes said that by accepting bids at a price which cannot return a profit, one is penalising efficiency, which is true but it must be remembered that efficiency is being still more heavily penalised because the selling prices set by "Inefficiency" will establish a precedent which has to be gradually overcome by educational methods by the efficient. Therefore, I believe reasonable people will agree that the present method adopted by the Government of allocating paper and other orders is illogical. Whatever our political affiliations may be, we must take off our hats to Mr. Hoover for his efforts to improve industrial conditions. He stands for "Standardization," "Efficiency" and know-what-you-are-doing methods and I therefore make the suggestion that he could make his preaching carry more force if he could do anything which would cause the Committees charged with the purchase of Government supplies to do their share towards encouraging efficiency by refusing to accept bids unless they are satisfied the prices quoted will net a reasonable profit to the bidders.

Comparative Conversion Costs

Before discussing the second point, "What is meant by comparative conversion costs," let us consider first of all what we mean by "Costs." I have very definite ideas regarding the difference between "Costs" and "Expenses." I think that the word "Costs" should only be applied in the case of a manufacturer to those expenditures made which were absolutely necessary for the production of the finished product, plus handling to put it into the mill storehouse, where the finished products are stored awaiting shipment, or into the railroad car at the mill.

Expenditures past this point, in my belief, should be designated as **expenses** since they relate to the distribution and selling of the finished product.

The point is this, is the value of the finished product increased because it is taken from one place to another, or because salesmen are trying to dispose of it? Many people may say that the value is increased by transportation because in the place to which the product is taken a higher price can be secured for it, and that the difference between the price which can be secured at the place of manufacture and the price which can be secured at the place to which the product is taken is larger than the cost of transportation and handling necessary to get it there. This difference, however, should not accrue to the value of the finished product. It is in a different realm altogether. It is really an accrual which has to do with the work of the Sales Department and the intrinsic value, as it were, of the finished product is not in any way increased. Another reason why the word "Costs" in my opinion should not be applied to expenditures made after the finished product leaves the mill is because up to that point the Superintendent is responsible for all expenditures made, except those for which the Purchasing Agent is responsible, namely, in connection with the purchasing of raw materials and supplies, etc.

"Costs" therefore are represented by the expenditures made up to the point where the finished product leaves the mill or goes into the warehouse to await shipment.

If that distinction is made between **costs and expenses** it will eliminate a certain amount of misunderstanding caused by the use of misleading terms, for to my mind the word "Costs" should only be applied to expenditures which contribute to the intrinsic value of the finished product. Expenditures made for the purpose of selling or distributing this product do **not** add to its intrinsic value and moreover they come under the jurisdiction of the Sales Manager and not the Superintendent. Each of these officials want data particularly relating to the expenditures for which he is personally primarily responsible.

The Superintendent wants data relating to "Costs;" the Sales Manager wants data relating to "Selling and Distrubing Expenses." Taking the total amount of sales for a definite period as 100 %, it is easy to ascertain the percentage of the cost of sales, also the percentage thereto of each of the different items making up the selling and administrative expenses. The Superintendent should be interested in the percentage shown by the cost of sales because if the Sales Manager is figuring on a certain percentage of profit and does not obtain it, although filling the sales quota and not exceeding amounts allowed for selling and administrative expenses, naturally he will find that the percentage shown by the cost of sales is larger than it should have been and that, therefore, the percentage of manufacturing or gross profit has been thereby decreased. If the cost of sales only includes expenditures made up to the point where the finished product is ready for shipment, the Superintendent will know that he is entirely responsible for the increase and will look to the Cost Department for an explanation. On the other hand, should an increase take place in the expenditures past that point, it will be the Sales Manager's duty to ascertain from the cost accountant where the increase occurred.

There is another important reason why the word "Costs" should only be used as stated. Even the Government has now decided that inventories should be valued at market or "Cost" whichever is lower. It is not difficult to determine the market value but what is the cost value? It is the total of the expenditures made to produce the finished article ready for shipment, therefore those expenditures represent the **costs** excepting naturally, expenditures on capital account. Expenditures made past that point are made to assist in disposing of the product and are therefore **expenses** incurred over and above the inventory value of the finished products. Naturally these expenses must be considered when estimating "Selling Prices." That's why I object to the use of the term "Cost estimate" unless this is applied to the value of the finished product ready for shipment. It is, of course, however usually applied to what is really a "Selling Price Estimate" which naturally includes **costs and expenses.** It should therefore be clearly understood that the term "Cost Estimate" and the word "Costs" do **not** include expenditure for selling or distributing purposes. That paves the way for a definition of what this Association means by "Comparative Costs." Perhaps it will help to a clearer understanding of this term if I say that our sole object in bringing to the attention of pulp and paper manufacturers the importance of "Comparative Costs" is to assist them to make their products in the most efficient manner.

We are not attempting at present to assist in **selling** or **distributing** in a more efficient manner but to manufacture more efficiently. This should be clearly understood and partly explains why I believe such a distinct line should be drawn between **costs** and expenses.

Having thus established what we mean by **Costs** the question is "How can we assist manufacturers to become more efficient in their manufacturing method?" Obviously by showing them where their costs are high and the best way to do this is by comparing these costs with the costs of other manufacturers making similar products. Some will be high on one operation and some high on another.

Perhaps I should now define what we mean by the use of the word "Conversion" before Costs. This means nothing more nor less than the costs of converting the raw materials into the finished products. In other words, by putting the word "Conversion" before Costs, we signify that we intend to omit the **costs** of the raw materials. We intend to omit these costs for reasons which need not be stated here. I would like to remark, however, that it should not be forgotten that the main object of this Association's activity is to improve accounting methods generally throughout the pulp and paper industry because our members know, that the better these methods become, the sounder will be the financial basis on which the industry will stand. We are not concerned with the purchasing of raw materials. That is a matter for the trade associations with which we are affiliated in the various branches of the industry. They compile statistics to assist their members in making these purchases and we should not be doing anything to assist "Manufacturing Efficiency" by gathering information as to the prices paid for materials.

Conversion Costs therefore mean costs relating to the "Converting" of the raw materials into the finished products, **exclusive** of the cost of the raw materials. Of course, the **quantities** of the raw materials used ust be taken into consideration but their cost will be omitted.

In order that "Conversion Costs" may be collected on a comparable basis, which is what is meant by "**Comparative** Conversion Costs" it is necessary to find Standard bases about which there can be no doubt in the minds of manufacturers and this is the problem which Mr. Reilly will attack in his address on "A standard Basis for Comparative Conversion Costs" which will be given at the Hotel Nonotuck, Holyoke, Mass. during our forthcoming Convention there on November 9th, 10th, and 11th. I know the solution proposed by Mr. Reilly and I believe it is a good one which will meet all our needs and enable this Association to collect these vital statistics on a satisfactory comparable basis. What we shall want more than anything else is the **full** cooperation of manufacturers both financially and morally. By morally I mean they cannot expect to receive information unless they are willing to give it. If they will support us and send us information which, by the way, will always be treated in the strictest confidence, we can give them information in return which should mean real money to them.

* * *

The tentative program on another page shows that a serious effort is to be made to explain thoroughly the methods we propose to adopt for the collection of "Comparative Conversion Costs" and I trust that a really representative gathering of pulp and paper cost men will be present so that the proposals made may be thoroughly discussed and explained.

POWER EXPOSITION WILL DRAW FROM ALL INDUSTRIES

Engineers well known in industrial and public utility power generations make up the Advisory Committee which is guiding the National Exposition of Power and Mechanical Engineering. This exposition will open at the Grand Central, New York City, on December 7th at noon and will extend through to December 13 (except the intervening Sunday). It will immediately follow the annual meetings of the American Society of Mechanical Engineers and the American Society of Refrigerating Engineers. Irving E. Moultrop of the Edison Electric Illuminating Company of Boston heads the Advisory Committee, and his colleagues are: Dexter S. Kimball, President the American Society the American Society of Mechanical Engineers; Alexander G. Christie, Chairman, Power Division A. S. M. E.; Fred Felderman, National President National Association of Stationary Engineers; Milan R. Bump, President National Electric Light Association ; N. A. Carle, Vice President, Public Service Production Company of New Jersey; E. B. Katte, Chief Engineer, Electric Traction, N. Y. C. R. R. Co; Fred R. Low, Editor "Power"; David Moffat Myers, Consulting Engineer; Calvin W. Rice, Secretary The American Society of Mechanical Engineers, and the managers, Charles F. Roth and Fred W. Payne.

This Advisory Committee is keenly alive to the importance of an exposition that will stress the engineering phases of the problems involved in the economical uses of fuel and the more effectual generation and utilization of power. The effect of such an exposition must be far-reaching and the plan outlined by the Committee insures a show that will benefit the manufacturer who uses only a small boiler for process steam as well as the engineers of the great cement, ceramics, metallurgical and power generation industries, whose fuel and power problems are extensive and severe.

The list of firms who have already reserved space shows that all apparatus and materials used in harnessing the energy released from fuels will be represented. The general appreciation of the importance of the exposition further insures the showing of the newest devices and best methods.

The program for the week has been arranged so that those interested especially in fuels and power can attend the Technical sessions on these subjects at the annual meeting of the American Society of Mechanical Engineers. Sessions on Ash Handling Machinery, Stokers and Steam Utilization have already been announced; others are to come later and it is probable that the papers on these subjects will be amplified by the exhibits at the exposition.

All members of the American Society of Mechanical Engineers who attend the meeting will receive the half fare return certificate which will enable them to attend the Exposition. Details of the certificate plan will be issued at a later date in the publications of the A. S. M. E.

The educational functions of such an exposition cannot be overemphasized. Not only is the contact between the purchaser and manufacturer of power plant equipment stengthened but there is the advantage of being able to compare displays and to choose that which is suitable and desirable.

WIRE ROPE — HOW IT IS MADE AND USED

By GEO. H. LUCE, of the Waterbury Company

The modern method of manufacturing wire rope is an elaborate process and is one of the largest industries in the country.

The quality of wire rope, of course, is chiefly dependent on the wire that goes into it. The facility upon which any metal can be drawn into wire depends largely upon its ductility.

Wires are drawn from rods by forcing them through the hole of a draw plate. This is an oblong piece of hard steel pierced with conical holes carefully prepared to the required size. After drawing, every wire that goes into the cable is tested at least twice.

After the wires are drawn, they are then put through what is called a stranding machine, i.e., a machine that lays up a number of wires into a strand. Strands most commonly used for wire ropes in logging operations are composed of either seven wires or nineteen wires. The nineteen wire strand makes a flexible cable, whereas the seven wire strand makes a stiff cable.

After the strands are made up, they are then put in what is called a "laying up" machine. This machine lays up a number of strands (mostly six or eight strands) around a hemp or wire center into a rope. Six strand lines are universally used for main lines and back lines. Eight strand lines, or what is termed extra flexible wire rope, are sometimes used for choker rope. Particular care has to be taken to see that the strands that constitute a wire rope, are laid up tight and firm, so as all of them will have the same tension under strain. While the core of a wire rope is used as a cushion for the strands to rest on, it is at the same time a very important part of the cable, for if it is not properly made the rope will get distorted and quickly wear out. Manila rope cores are chiefly used in wire ropes where flexing is required, although in latter years very good results have been obtained by the use of a flexible wire rope core, that is, a wire rope within a wire rope, particularly for high lines in logging operations.

One of the most essential things in the use of a wire rope is proper lubrication, and we cannot too firmly impress on users of wire rope, the importance of this. A wire rope should be lubricated the same as any other part of machinery in your plant.

Logging is considered one of the hardest usages to which wire ropes are put in modern times. Originally, yarding of logs, was done with Manila lines. This method was done away with by the use of the "Humboldt" yarder, by using a 5/8" diameter wire cable operated on the Gypsy of the yarding machine. The up-to-date logging machines are now using as big as 1½" diameter cables for yarding, operated from drums. One and one-half inch logging cables are the exception, rather than the rule, although there are any number of 1⅜" cables used.

The latest patterns of logging machines, are now built with so much power, that if the full amount of steam is put on, they can break the strongest cable that is made, with the first pull, whereas in former years, if full power was put on in the first pull, the machine would be pulled off its setting before breaking the rope. This should be taken into consideration by operators before condemning cables, which is often stated "broke with the first pull."

High speed machines, which are now being largely used in the woods, are very hard usage on wire rope. It is the contention of wire rope manufacturers that wear increases with speed, and it is therefore better to increase the load than the speed; but as the success of logging operations depend upon the number of logs that can be put into the mill pond within a given time, high speed machines are used at the expense of the wire rope.

Aerial, or as is termed, sky lines, are being very successfully used in operations where rough and gulchy country is to be contended with. Most of these cables average 1¾" diameter and 2" diameter with wire rope cores.

High pole yarding is one of the most up-to-date methods used. This is done by setting up a spar tree, heavily guyed on all sides with cables. A heavy block is set at the top of the tree, through which the rope travels, keeping same off the ground and causing less abrasive wear. Ropes used by this method last from 50 to 75 per cent longer than surface lines.

The Waterbury Company's armored rope (Gore patent) embodies the first radical and important improvement in wire rope construction in many years. Each strand of the rope is wound with flat steel wire having convex edges, and this forms a protective armor which relieves the tendency for the strands themselves to wear and preserves the strength of the rope until after these flat wires have been worn completely through, after that the wires in the rope wear out. The flat wires when worn through do not project, but are pushed down into the interstices of the rope, thus giving a greater wearing surface than is ordinarily obtained.

PULPWOOD LIMITS IN ONTARIO DISPOSED OF

Toronto, Oct. 18. — (Canadian Press.) — Important pulpwood concessions in the Temiskaming district are involved in the sale announced yesterday at the Parliament Buildings of the timber rights on a tract of land in Shackleton Township comprising some forty and a half square miles. The limits have been advertised for sale since the latter part of September and the successful bidder is the Hawk Lake Lumber Company of Monteith, Ontario, which agrees to pay $1.80 per cord for the spruce pulpwood on the property, 85c per cord for other pulpwood, and $3.80 per thousand feet for any spruce and poplar timber which it might cut. The limits are said to be, however, almost entirely a pulpwood proposition.

The sale of the right to cut pulpwood on a 160 acre tract in the township of Gorham in the Thunder Bay district was also announced. The successful tenderer for the concession was John Kelvu lumber man of Port Arthur, who bid $3.05 per cord for spruce pulpwood and $1.75 per cord for other pulpwood, the price in both cases to include both his bonus and the customary Crown dues.

EUROPEAN PAPER FUSIONS

The *Svenska Dayblad* reports that Germany may join the fusion of the Scandinavian and Finnish paper concerns, which is being formed under American leadership. Practically all the paper exporting industry of Europe will then be controlled by the same interests.

The Swedish paper industry is fairly busy and the demand from America for newsprint is reported as good.

Scandinavian pulp producers report that they are satisfied with the progress of business and that their mills ars satisfactorily employed.

Mr. and Mrs. George Chahoon, Grand'Mere, announce the engagement of their daughter, Miss M. E. Chahoon, to Mr. George Edwin Brown, of Boston.

Seasonal Influences on Sulphite Manufacturing*

By Walter S. Haley, Sulphite Mill Supt. Parker-Young Co., Lincoln, N. H.

An old timer said, "I am an old man and have seen lots of trouble of which never happened." The writer's experience in Sulphite Mills dates back many years. In that time he has seen lots of trouble, most of it avoidable. Many mysterious happenings in sulphite mills in early days are now easily explained and avoided almost without thought. We do not lie awake nights trying to decide whether to boil the lime water or to freeze it.

Formerly the advent of summer was dreaded in sulphite mills. What was known as usual summer troubles was expected to begin about June 1. A summer without much hot weather was as gratefully received as a mild winter. With the first frosty mornings in the fall sulphite men took a new interest in life.

Much of this article can be termed old stuff. Within the last year, however, two mills and probably others were so handicapped by warm weather as to seriously consider installing separators for the digestor relief. Separators were once used in every sulphite mill but have not been necessary for a number of years. A little ancient history may therefore be of interest to some members of the craft.

As long as the temperature of the acid in the storage and reclaiming tanks does not get above 90 degrees Fahrenheit or 32 degrees Centrigade no trouble need be experienced in getting strong cooking acid with either milk of lime or rock acid systems. The water used in the summer time very seldom gets above 75 degrees, Fahrenheit. By using sufficient cooling surface and enough water for cooling the relief from the digestors and the raw acid, the temperature can be kept below 90 degrees.

The amount of cooling surface can be curtailed if cold water is available from deep wells. It is generally cheaper, however, to instal plenty of cooling equipment and use the regular water supply. One mill in the west had summer troubles for nineteen years due to lack of cooler, the temperature of the acid reaching 95 degrees about June 1. Within 500 feet of the mill were abundant springs of water with a temperture of 55 degrees. At the writer's suggestion several hundred gallons per minute were pumped into the acid plant during warm weather. This effectually put a stop to their summer troubles.

To overcome warm weather conditions many ingenious devices have been evolved. In an endeavor to have warm acid absorb more SO_2 than is chemically possible such devices have been used as perforated pipes in the bottom of the tanks to distribute the relief liquor; nozzles pointing in different directions, and pipes entering the tanks at different points. Another way in which a simple matter has been complicated at times is to have the gas and liquor separated, the gas blowing directly into the liquor in the tank used to supply the digestors; the separated liquor run into another tank and portions of it used to blend with the acid under treatment.

In many cases perfectly good acid systems have been discarded for new ones of another type, all on account of not having sufficient cooling equipment. Many of these changes were proposed in hot weather. About the time the changes were made colder weather would set in and everything would be all right. The new stuff would get the credit for the improvement, and another summer would often evolve something else, either home grown or copied from some other mill.

I will describe briefly the methods and apparatus I have found effective in summer as well as in winter.

Sulphur Burner

The revolving sulphur burner with a brick lined combustion chamber will give the best results operated as follows:

For making acid for each ton of pulp per twenty-four hours open the front draft one square inch. Up to 50 tons of pulp per day one standard burner will give better results than more. For making acid for 50 tons of pulp have the front draft open 50 square inches. Regulate whatever additional air is needed by opening or closing the air inlet between the burner and the combustion chamber. If the gas test is low close the inlet a little and open it if test indicates danger of pulling over unburned sulphur. The writer was placed at one time in charge of a mill making 70 tons of pulp a day and using five sulphur burners with a consumption of 320 pounds of sulphur per ton. A year later it was making more pulp and using only two of the burners and 237 pounds of sulphur per ton.

Sulphur Melting

In the same mill during this time we installed a sulphur melter. Sulphur melting tanks have in a number of cases been tried and discarded, due to trouble in operating and cleaning. With the proper apparatus the difficulties have been overcome. Using melted sulphur a burner can be fed more uniformly. This means a higher average gas. The higher the gas tests the less sulphuric gas will be formed.

Wet sulphur fed directly into the burner will cause sulphuric acid to be deposited in the coolers. Also, the heat units required to evaporate the moisture, if it is done in the burner, will lower the temperature in the combustion chamber sometimes below the point at which sulphurous gas is generated. If the sulphur is melted before it is fed into the burner the moisture is driven off outside. With melted sulphur a much shorter time is required to get the acid system to making strong acid after starting up cold. This decreases the amount of sulphuric which is always produced during the heating up period.

Furnace Gas

Gas to be low in sulphuric should test at least 15 per cent SO_2 and be as much stronger as the conditions will permit, care being taken not to go too high and allow unburned sulphur to be carried over into the cooler. The gas should be tested at least once an hour by the acid maker and the results recorded, regardless of any automatic devices or laboratory tests. The acid maker should vary the amount of air admitted to the chamber in accordance with his jests. His interest should be stimulated to observe the changes in the makeup of the acid due to gas aeration. The acid maker should also test the strength of the finished acid and the temperature of the water supply, the lime water and the finished acid.

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*Read at the meeting of the New England Division of American Pulp and Paper Mill Superintendents' Association, Lincoln, N. H., October 7, 1922.

Furnace Gas Cooler

A simple cooler of six inch lead pipes, the pipes submerged, with a cooling surface of 25 or 30 square feet per ton of pulp, will cool the gas amply without the need of an extraordinary amount of water. The water used in a gas cooler of this capacity can first be used for cooling the raw acid. While the above type of cooler is mentioned, any other kind of cooler will do the work as well providing it has sufficient cooling capacity. Extraordinary claims have been made for certain types of coolers as not filling with unburned sulphur and so forth; the pattern of the cooler, however, has nothing to do with the sublimation of sulphur.

To get good results with any acid system the inlet and outlet to the cooler should be large enough. Something not generally known is that the hot gas entering the cooler has four times the volume of the cooled gas leaving the cooler. To facilitate the absorbing of the gas in the acid system the vacuum should be as low as possible where the acid is finished as it leaves the acid system. This emphasizes the need of large enough pipes to prevent friction. A pipe area of four square inches per ton of pulp for the hot gas and one inch for the cold gas gives fine results. For a 100 ton acid system use a 24 inch pipe for the hot gas and a 12 inch for the cooled gas.

Raw Acid Cooler

With a milk of lime system the acid as it leaves the absorption tanks has increased in temperature. This is due to the heat produced when the lime is slakened and in the further chemical reaction which takes place when the sulphurous and sulphuric gases unite with the lime water. No amount of cooling of the gas previously will prevent this increase. The temperature can be reduced nearly to the original temperature of the water supply by the use of a lead cooler. 300 feet of 4 inch lead pipe submerged in a shallow vat of water will be sufficient for a 60 ton mill.

A small centrifugal pump is generally used to pump the raw acid from the absorption tank to the auxiliary tank or to the reclaiming tank. This pump will pump the acid through the cooler on its way to its destination without any noticeable increase in the power used. When the weather becomes cool enough the acid can be pumped direct again and the cooler and vat can be drained off until another summer.

Operating Acid System

The acid plant should be making fresh acid all the time that a digester is relieving and making acid only about as fast as it is used. For illustration, there will be about 7,000 gallons of liquid relieved in cooking a ten ton digester. About 20,000 gallons of fresh acid should be made and blended with this in the storage tank. With a definite length of cooking time and with the vacuum pumps speeded right a blend of new and old acid can be made with a high and uniform test maintained day after day. No relief separator is needed to do this, merely have sufficient cooling equipment to keep the temperature down to 90 degrees.

Steaming Digesters and Spacing

With two or more digesters it is of the utmost importance suitable time shall elapse between the starting of each cook. With two digesters cooking eight hours or a little over keep at least four hours apart. Unless a rule is made sometimes one digester will creep up on the other until they are steamed close together. The spacing of the digesters gives a more uniform pull on the boiler plant and distributes the relieved liquor and gas to better advantage to the relief cooler. This is very important as it gives the cooler a better chance to cool the relief before it is blended with the acid in the reclaiming tanks. The acid will also show a more even test.

A western mill has six digesters and burns oil. After arranging a schedule for steaming and spacing the production was increased with a reduction in fuel oil used of 200 barrels a week. The strength of the acid was increased and the amount of sulphur used per ton of pulp reduced.

Relief Strainers

To build the acid up and reduce the amount of sulphur per ton it is necessary to have the relief pipes of sufficient size so that when wide open at the latter part of the cooking the pressure in the digester can be pulled down 25 or 30 pounds. A good type of relief strainer is one that is attached to the cover and nearly fills the neck of the digester. For a ten ton digester have had a strainer with 1,100 3/16 inch holes. A separate steam regulator for each digester is in use nearly everywhere. The value of a small steam pipe, by-passing the regular steam valve, is not so generally realized. A four inch steam valve with a one and a half inch by-pass is of great benefit in getting uniform circulation in a 10 ton digester. With it a schedule for steaming can be posted in the digester room. When followed uniform cooking is assured.

Relief By-Passes

In addition to the steam by-pass a small pipe by-passing the regular relief valve makes an ideal combination for uniform cooking. We have in our mill instruction sheets for cooking different lengths of time. We merely give instructions to the digester men to use 7 hour, 8 hour, or 9 hour schedule. They refer to the proper sheet and act accordingly. Instead of drawing ideal curves on the recording charts these instructions state how long to use the steam by-pass only; when to open the four inch valve one-quarter turn and when another one-fourth turn. In like manner the operating of the relief valves is designated; when to open the relief valve wide and recover the gas. All is set down in a few words.

The Relief Cooler

The relief cooler should be large enough and be supplied with water enough so that all of the relieved liquor and gas can be blended with the freshly made acid without raising the temperature in the storage and reclaiming tanks above 90 degrees. With these conditions such things as separators, auxiliary tanks for reclaiming, and extra tanks for separating and blanding the recovered liquor and new acid will not be needed.

Storage Tanks

For a 60 ton mill two large wooden tanks work very well, to be used for storage and reclaiming. The relief is distributed about equally in the two tanks. A four inch pipe passing down through the center of each tank liberates the relief through the open ends of the pipes. The ends pointing down and about 18 inches from the bottom of the tanks. The volume of relief being discharged at one point in each tank causes the contents of the tanks to circulate freely thereby coming in contact with the ends of the pipe. The results are fully equal to any net work of perforated pipes crisscrossing the bottoms of the tanks.

Conclusion

In using the above methods one thing that works nicely is the interest that the cooks and acid makers take in carrying out the instructions and manipulating the simple apparatus. The absolute certainty of obtaining good results continually after perhaps years of uncertainty gives them great satisfaction. Any man likes to do a good job and to be allowed a share in the credit for it.

STARCH AS A RAW MATERIAL IN THE PAPER INDUSTRY

Starch has been one of the materials used in the making of paper as far back as the history of paper making is known, thin slices of papyrus being cemented together by starch. Early manufactures of hand-made sheets of paper from cotton and linen, were completely sized in one operation by dipping the sheets into solutions of starch. Specimens are in existence, approximately a thousand years old, which to-day are suitably ink resistant for writing, showing not only the ability of even the crude starches used by the earliest paper makers to render the essential service of sizing, but also the permanence of the sizing results. The first use of starch was surface sizing. Later, extensive use developed in beater or engine sizing.

Apart from the advantages of a highly modified starch as a colloid to add to resin size, starch is frequently added to the beater to give greater strength and handle to paper, and a better surface finish. For this purpose the starch should first be mixed with water and then heated until swelling is well under way, preferably to a temperature of 165 to 170 degrees F., and then promptly quenched with cold water to stop further solution. Used in this way, distribution is better, and there will be no sliming up of the pipes.

Starch used in beater sizing or applied as a surface size during finishing on the calenders, gives a brighter effect when printed on. This, because starch sizing is not affected or dissolved by printers' ink. The colours of the printers' ink, therefore, stand out with greater brilliance.

It is added in colloidal solution to the resin size before it is added to the pulp, to aid in distribution of the resin, and it also may be added, not dissolved but swollen, directly to the pulp in the beaters.

Highly modified starch products have found favour in coating book and catalogue work, competing with casein. Coating for multi-coloured lithograph work requires greater waterproofness than can be secured with modified starch coating. Notwithstanding the lack of waterproofness, starch coating has a number of attractive qualities not possessed by casein. Its use alone or combined with casein should be encouraged, as it helps to keep casein prices in line, and its use wherever possible will encourage effort on the part of the manufacturer to improve. A fortune awaits the person who develops a way of producing starch coating as waterproof as casein coating. Apart from multi-coloured litho work requiring many wettings during printing, the only real objection to starch-coated sheet may be that starch coating responds to the iodine test; only by this iodine test or other chemical test can the well-made starch-coated sheet be distinguished from casein coated.

Starch is also used by paper makers as an adhesive in combining sheets of paper for bristol board, papeteries, and similar uses. Here, again, the starches differ in service value. Unless you have investigated, you will be astonished at the enormous difference between two cards made of the same paper stock, but pasted with different starches—one may be flexible, lively and snappy, the other heavy and brittle. Wheat flour gives a better spreading, smoother paste than corn starch. Wheat flour is made up of three principal substances, one of which is pre-eminently superior to the others, or to any other cereal or root starch. Wheat starch makes a more adhesive dextrine than corn starch or rice starch. Potato or tapioca starches make better dextrines than wheat, corn, rice, or any of the cereal starches. This is due doubtless to the lesser solubility of the cereal starches and their less responsiveness to the dextrinising treatment.

One other large use of starch is of interest. This is in the making of wood veneers, or ply wood, for doors and office furniture. For this work animal glue was formerly used almost exclusively. To a very large extent this has been replaced by starch. Tapioca starch is best suited for this work. Tapioca starch, so modified that when 3 to 6 per cent. solution of caustic soda is added it gives a viscous glue-like solution, is used to bind the plies.

A proper conversion is essential to prevent too much wetting from absorption of the glue, which would result in swelling, and afterwards shrinking and warping in drying. Just the right conversion is also a factor of economy in effecting the spread, or covering capacity. Some 30,000,000 lb. of tapioca starch are used yearly in the wood veneer industry.

The following table shows the United Kingdom imports and exports of the various starch, dextrine, farina, and potato flour.

Year.	Imports. cwts.	Exports. cwts.
1921	1,539,271	29,884
1920	1,613,687	67,021
1913	2,135,598	13,519

The imports of starch, dextrine, farina, and potato flour for the six months ended June 30, 1922, totalled 1,029,144 cwts., the quantity for June alone amounting to 179,282 cwts.

DAWN — THE METAMORPHOSIS

From out warm blankets, in the heartless dawn,
Without the vaguest chance to stretch or yawn,
Wet socks and boots, and fingers numb with frost,
Your feelings raw, your temper nearly lost—
Lo! at his fire the heaven-sent cook performs,
And in a trice a dish of coffee warms
Your gelid vitals—Lord, but that was good!
Your grouch evaporated while you stood
With outstretched hand, and eagerly did wait
The heaped up riches of your breakfast plate.
Breakfast absorbed, (your slightly loosened belt
Proved it had tasted well as it had smelt)
You saw the dawn, no longer chill and gray,
A golden promise of a glorious day.

J. C. M.

Factory Mutual Fire Insurance

BY FREDERICK T. MOSES

Vice-President and Engineer Firemen's Mutual Insurance Company

Eighty-seven years ago a group of Rhode Island manufacturers, unable to secure relief from the extortionate rates charged by stock fire insurance companies, associated themselves and formed the first Factory Mutual Insurance Company. The immediate success of their efforts attracted the attention of other New England manufacturers and rapidly led to the formation of additional companies, both in Rhode Island and in Massachusetts. For a number of years their underwriting was confined to New England, but as the results achieved by the organization became known, they were asked to extend their work to other states and to Canada. The system has grown to a point far beyond the thought of its founders, and to-day is the strongest, most progressive underwriting organization in existence.

The public looks upon the Factory Mutual system as an organization which became successful thru the selection of risks from a class in which there was little or no fire hazard. This impression is not the correct one. The Mutual Companies originated with textile plants, a class so hazardous as to be almost uninsurable. The frequent fires and heavy losses brought forth an intensive study of the hazards involved, founded the Mutual system of inspection, and resulted in bringing the textile mills to the point where to-day they are considered preferred risks. This is in direct antithesis to the Stock insurance point of view that the rate should be made to fit the hazard, the underwriter acting merely as a distributor of losses.

The fire prevention department of the Mutual Companies has grown rapidly. New methods of manufacturing, the introduction of electrical machinery, and high speed methods of production developed in the mechanical industries have all presented new problems whose solution has necessarily kept pace with industrial development of the country. Our engineering work to-day involves an annual expenditure of about $75,000. Large insurers, as for example the International Harvester Company and the General Electric Company, have frequently stated that they consider the fire prevention service of the Mutual Companies of greater value than the entire cost of insurance. Systematic inspections of each plant are made four times a year, and the services of special engineers are available to the assured at all times. Special investigations of this nature have been extended to such subjects as the prevention of dry rot in factory timber, the prevention of fire in solvent naphtha in rubber spreader rooms, the control of celluloid fires by automatic sprinklers, the prevention of fire in pulp wood piles, the prevention of dust explosions in grain elevators and starch factories. The laboratories maintain a staff of engineers constantly engaged in the investigation of new devices for fire prevention, together with supervision over the manufacture of such materials.

The Inspection Department has also developed a quick and accurate method of appraising factories. This work is done without cost to the policyholder. Such apprasials fulfill practically all the requirements of those made by independent appraisal organizations. They have been accepted for tax purposes and as a basis for bond issues. They offer a further advantage of furnishing *before the fire* a satisfactory base for the adjustment of a loss.

The field covered by the Factory Mutual Companies is comparatively limited in extent. Insurance is written only on factories and warehouses of superior construction, protected with automatic sprinklers. Liability is not assumed within the closely built up sections of cities, except to a very limited extent, and then only on fully protected reinforced concrete buildings. The moral hazard is eliminated by a careful preliminary scrutiny of the business record and financial integrity of the prospective policyholder and by a periodical review of these considerations by the officials of the Companies. So carefully has this feature been observed that during the past two years, when general fire losses in the United States and Canada were the greatest in their history — except in the year of the San Francisco conflagration — those of the Mutual Companies were the lowest ever known.

The management of the Companies is in the hands of a group of officials elected annually by the Boards of Directors, who are themselves policyholders, and so necessarily vitally interested in the success of the companies.

Rates in these Companies are based on the loss cost experience with various classes of manufacturing. In arriving at the rate on a risk, comparison is made with other plants as to construction, occupancy, protection, location and exposure. Each risk in the same class takes the same rate, thus insuring a fair and equal distribution of cost.

The following table is taken from the annual report of one of our Companies and is fairly representative of the results obtained by all. The cost of insurance is given in ten year periods and shows the results of constantly improved methods of protection and inspection.

Period	Annual Cost of Insurance — Cts. per $100
1850-1860	43.73
1861-1870	27.95
1871-1880	25.38
1881-1890	22.71
1891-1900	14.36
1901-1910	6.77
1911-1920	6.34
1921-	3.23

The financial standing of the Mutual Companies is not correctly shown by the usual published financial statements, as these are issued in the form prescribed by various insurance departments. The large advance premium collected by these Companies creates for the payment of losses a fund over ten times as great in proportion as is available in the largest stock fire insurance companies. The relative loss paying ability of the Factory Mutuals is the highest of any insurance organization.

Policies are written on a broad and liberal form, generally without coinsurance restrictions.

Printing

There is some probability that this art originated in China, where it was practiced long before it was known in Europe. Some European traveller might have imported the hint. That the Romans did not practice the art of printing cannot but excite our astonishment, since they really possesed the art, and may be said to have enjoyed it, unconscious of their rich possession. They had stereotypes, or printing immoveable types with which they stamped their pottery. How in daily practising the art though confined to this object, it did not occur to so ingenious people to print their literary works, is not easily to be accounted for. Did the wise and grave senate dread those inconveniences which attended its indiscriminate use. Or perhaps they did not care to deprive so large a body as their scribes of their business. Not a hint of the art itself in their writings.

When first the art of printing was discovered, they only made use of one side of a leaf; they had not yet found out the expedient of impressing the other. Specimens of these early printed books are in his Majesty's and Lord Spencer's libraries. Afterwards they thought of pasting the blank sides, which made them appear like one leaf. Their blocks were made of soft woods, and their letters were carved; but frequently breaking, the expense and trouble of carving and gluing new letters suggested our moveable types, which have produced an almost miraculous celerity in this art. Our modern sterotype consists of entire pages of solid blocks of metal, and not being liable to break like the soft wood at first used, is profitably employed for works which require to be perpetually reprinted. Printing on carved blocks of wood must have greatly retarded the progress of universal knowledge; for one set of types could only have produced one work, whereas it now serves for hundreds.

When their editions were intended to be curious, they omitted to print the first letter of a chapter, for which they left a blank space, that it might be painted or illuminated to the fancy of the purchaser. Several ancient volumes of these early times have been found where these letters were wanting, as they neglected to have them printed. The initial carved letter, which is generally a fine wood-cut, among our printed books, is evidently a remains of imitations of these ornaments. Among the very earliest books printed, which were religious, the Poor Man's Bible has woodon cuts in a course style, without the least shadowing or crossing of strokes, and these they inelegantly daubed over with colors, which they termed illuminating and sold at a cheap rate to those who could not afford to purchase costly missals, elegantly written and painted on vellum. Specimens of these rude efforts of illuminated prints may be seen in Strutt's Dictionary of Engravers, The Bodician library possesses the original.

In the productions of early printing may be distinguished the various splendid editions they made of primers or prayer books. They were embellished with cuts finished in a most elegant taste, many of them were ludicrous, and several were obscene. In one of them an angel is represented crowing the Virgin Mary, and God the Father himself assisting at the ceremony. Sometimes St. Michael in overcoming Satan, and sometimes St. Anthony is attacked by various devils of the most clumsy forms — not of the grotesque and limber family of Callot.

Printing was gradually practiced throughout Europe from the year 1440 to 1500. Caxton and his successor, Wynkyn de Worde, were our own earliest printers. Caxton was a wealthy merchant, who in 1464, being sent by Edward IV, to negotiate a commercial treaty with the Duke of Burgundy, returned to his country with this invaluable art. Notwithstanding his mercantile habits he possessed a literary taste, and his first work was translation from a French historical miscellany.

The tradition of the devil and Dr Faustus was derived from the odd circumstance in which the Bibles of the first printer, Fust, appeared to the world. When he had discovered this new art, and printed off a considerable number of copies of the Bibles, to imitate those which were commonly sold in Mss, he undertook the sale of them at Paris. It was his interest to conceal this discovery, and to pass of his printed copies for Mss. But as he was enabled to sell his Bibles at sixty crowns, while the other scribes demanded five hundred, this raised universal astonishment; and still more when he produced copies as fast as they were wanted, and even lowered his price. The uniformity of the copies increased wonder. Informations were given to the magistrates against him as a magician; and in searching his lodgings a greater number of copies were found. The red ink, and Fust's red ink is peculiarly brilliant; which embellished his copies was said to be his blood; and it was solemnly adjudged that he was in league with the devil. Fust was at length obliged to save himself from a bonfire, to reveal his art to the Parliament of Paris, who discharged him from all prosecution in consideration of this useful invention.

When the art of printing was established, it became the glory of the learned to be correctors of the press to eminent printers. Physicians, lawyers, and bishops themselves, occupied this department. The printers then added frequently to their name those of the correctors of the press; and editions were then valued according to the abilities of the corrector.

The prices of book in these times were considered as an object worthy of the animadversions of the highest powers. This anxiety in favor of the studious, appears from a privilege of Pope Leo X, to Aldus Manutius for printing Varro, dated 1553, signed Cardinal Bembo. Aldus is exhorted to put a moderate price on the work, lest the Pope should withdraw the privilege, and accord it to others.

Robert Stephens, one of the early printers surpasses in correctness those who exercised the same profession. It is said that to render his editions immaculate, he hung up proofs in public places and generously recompensed those who were so fortunate as to detect an errata.

Platin, though a learned man, is more famous as a printer. His printing office claims our admiration; it was one of the wonders of Europe. This grand building was the chief ornament of the city of Antwerp. Magnificent in its structure, it presented to the spectator a countless number of presses, characters of all figures and all sizes, matrices to cast letters, and all other printing materials, which Baillet assures us amount to immense sums.

In Italy, the three Manutii were more solicitous of corrections and illustrations than of the beauty of their printing. It was the character of the scholar, not of the printer, of which they were ambitious.

Among the learned printers formerly a book was valued because it came from the presses at an Aludus or a Stephens and even in our time the names of Bowyer and Dodsley sanctioned a work. Pelisson in his history of the French academy tells us that Camusat was selected as their bookseller from his reputation for publishing only valuable works. He was a man of some literature and good sense, and rarely printed an indifferent work. His name was a test of the goodness of the work. A publisher of this character would be of the greatest utility to the literary world; at home he would induce a number of ingenious men to become authors, for it would be honorable to be inscribed in his catalogue; and it would be a direction for the continental reader. —*Paper.*

THE PAPER MILL LABORATORY EQUIPMENT

Books

SINDALL AND BACON

(The Paper Makers' Monthly Jornal)

The equipment of many paper mill laboratories leaves much to be desired. Even in cases where the function of the "chemist" is limited to the testing of wood pulp for moisture, the examination of clay for grit and residue, the determination of such physical qualities of paper as weight, strength and thickness, the conveniences in regard to apparatus are frequently of a very crude order. The encouragement to improve methods of working to extend the usefulness of the laboratory even in such simple matters as those which deal more with physical questions than chemical processes and properties, so called is often non-existent, and generally of a very slender character.

In the course of our practice as consulting chemists we have naturally visited many paper mills and this lack of up-to-date equipment has forced itself upon our notice. It is doubtful whether we could compile a list of more than fifteen or twenty mills possessing a laboratory really adequate to the needs of the work and worthy of the possibilities connected with the special classes of paper needs. But even in cases where some attempt is made to carry on simpler chemical tests and analytical work, incentives to persuade the "chemist" to go "one better" are almost entirely absent.

Amongst such incentives to make himself more useful and better able to handle chemical problems, the chemist would mention if he dared, the question of books. . . .

We must confess to a feeling of surprise to find the average paper mill chemist expects to have to buy any books of a technical character out of his own resources, and acts upon the assumption that the firm would tell him to do so if he requested to be supplied. How far this is correct we are not prepared to say, but we would be very reluctant to believe that a young fellow in a paper mill, placed in the laboratory because of his keen interest in the technology of paper making, and probably seeking to improve his knowledge by attendance at technical classes, would be discouraged by his employers to such an extent.

After all, looking at the matter in its broadest aspect, *books* are as much a part of the laboratory equipment as *beakers* and *crucibles.* It is short sighted policy to begrudge either appartus or books to a lad anxious to do his best, particularly when many find themselves so situated that facilities for attending evening classes at technical schools are beyond reach.

Money expended in books of this character is a good investment and adds considerably to the efficieny of a laboratory and its technical value. For fifty dollars it would be possible to make some sort of a beginning and after that the requirements of the chemist in seeking to improve his own efficiency should be properly met without hesitation. It is an anomaly that the request for books should be made in fear and trembling. This may be an exaggerated statement but we think there is some ground for its existence.

As a modest start in the direction of a technical library in the chemists office one might be content with the following books (prices are for Canada): —

Text book of Paper Making, Cross & Bevan . .	$ 7.50
Paper Technology, R. W. Sindall	5.25
Paper Mill Chemist, H. P. Stevens	2.75
Testing of Wood Pulp, Sindall & Bacon	1.25
Cellulose, Cross & Bevan	3.50
Modern Pulp and Paper Making, G. S. Witham	6.00
Chemistry of Pulp and Paper Making, Sutermeister	6.00
Chapters on Paper Making, 5 Vols. Beadle . .	7.50
Paper and its Constitutents, Bromley	3.75
Manufacture of Pulp and Paper , Edited by J. N. Stephenson, 5 Vols.	25.00

But these books deal only with direct paper and pulp problems. The laboratory ought to be furnished with books on general chemistry and analytical methods for reference purposes. No chemist is going to make himself proficient even in routine analytical work by confining his attention to a perusal of the books specifically mentioned. The functions of a technical expert are of a much wider character. The chemist who is content with the work involved in filling a beaker, filtering a precipitate and weighing off the ash of a paper is missing the most interesting part of his real duty, namely, the application of his investigations in the laboratory to practical problems in the mill.

Parker K. Baird, technical engineer for Inland Empire Paper Company, Millwood, Wash., has been appointed chemist in forest products with Forest Products Laboratory, Madison, Wis.

Exports of Representative Canadian Products

	12 months ending July, 1922	12 months ending July, 1921	Increase or Decrease p.c.	4 months ending July, 1922	4 months ending July, 1921	Increase or Decrease p.c.	July, 1922	July, 1921	Increase or Decrease p.c.
Wheat (bus.)	150,935,359	136,968,832	+ 12	37,193,757	22,747,636	+ 64	9,486,747	3,648,957	+160
Wheat flour (bbl.)	7,740,960	6,721,469	+ 15	2,380,418	2,053,740	+ 16	486,115	465,264	+ 5
Cattle (head)	195,849	295,279	+ 34	29,154	46,863	— 38	14,400	9,561	+ 52
Bacon and hams (cwt.) . . .	921,731	1,080,444	— 15	307,457	377,806	— 19	90,433	106,369	— 15
Beef (cwt.)	288,341	414,506	— 30	70,258	75,483	— 7	12,760	8,891	+ 44
Butter (lb.)	12,981,743	7,209,276	+ 80	5,791,868	1,240,716	—367	5,414,462	529,492	+924
Cheese (cwt.)	1,173,231	1,348,052	— 13	287,979	453,247	— 36	174,695	243,697	— 29
Codfish, dried (cwt.)	634,369	529,417	+ 20	134,892	179,751	— 24	40,855	48,228	— 15
Salmon, canned (cwt.) . . .	414,709	313,967	+ 32	50,276	70,806	— 29	17,668	19,309	— 8
Planks and boards (M. ft.) . .	1,525,288	1,253,994	+ 22	668,818	302,160	+121	214,884	88,341	+143
Pulpwood (cord)	873,206	1,531,017	— 43	291,640	284,401	+ 3	90,965	80,835	+ 13
Wood-pulp (cwt.)	14,889,670	10,914,710	+ 36	4,910,212	2,555,779	+ 90	1,555,023	845,150	+ 84
Newsprint (cwt.)	17,325,904	14,033,190	+ 23	6,014,369	3,826,792	+ 57	1,540,081	1,146,362	+ 34
Sugar (lb.)	260,647,526	65,410,540	+298	165,683,814	45,919,400	+261	35,429,767	10,599,156	+234
Coal (ton)	1,677,106	2,307,594	— 28	433,247	709,194	— 39	242,607	289,199	— 16

+ Indicates an increase in 1922 over 1921.

— Indicates a decrease in 1922 under 1921.

SLIDE RULE FOR UNIT COST FINDING

Numerous methods are used in cost finding to calculate unit costs. Some firms invest large sums of money for the many expensive calculating machines on the market while others at the other extreme still use paper and pencil, feeling that their plant does not warrant the expenditure necessary to acquire a machine of any kind.

In some plants where machines are in use they are not adapted to the particular kind of work mentioned owing to the talking ability of some aggressive salesman who was convincing enough to sell them the wrong type of machine. Other plants have the proper type of machine but do not use it properly or often enough, due to ignorance of the particular machine's capabilities. On practically all of the many calculating machines on the market, division is unquestionably the most difficult operation and under these circumstances dividing through a cost sheet is a tedious task unless reciprocals are used which materially alters the situation making unit cost finding an exceedingly simple operation.

Accurate costs can be computed in an efficient and economical manner by the use of a twenty-inch slide rule costing approximately $16 as compared with about $300 for a calculating machine. Although this method is in common use, many operators continue to reset the rule for each calculation primcipally due to the fact that they have only an elementary knowledge of the capabilities of the slide rule. By using reciprocals a slide rule operator can obtain more accurate and rapid results with one setting of the rule, comparing favorably with the results obtained from calculating machines.

For the benefit of those not familiar with this method, the first step is to find the reciprocal of the divisor (Total production units) by dividing it into "one." (Books of instruction usually letter the four scales on a rule from top to bottom, A, B, C, & D.) The resulting reciprocal found under the "one" on scale "C" on the slide is of no importance in itself as it is found merely to set the rule in a position to multiply out the various items on a cost sheet without further adjustment. The "hair-line" can then be set on the various total cost items using scale "C" on the slide, the cost per unit will be found in each case on scale "D" directly under each total dollar amount on the slide. The results obtained are the same as those found by dividing each total cost item by the production in which the rule is reset for each individual calculation. Occasionally, of course, the reciprocal may be in such a position as to throw the answer off the rule, in which case a new adjustment of the slide should be made from the opposite end of the rule.

Students of higher mathematics, particularly engineers, are generally thoroughly acquainted with the practically unlimited results that can be obtained from the slide rule and from constant usage become expert at reading figures. This is the most difficult feature in connection with its use. In giving a slide rule a trial, operators should make certain that they understand the application of decimals to a ruler scale. Particular attention is directed to the unequal sub-divisions which may represent one decimal at one section of the rule and two decimal places at another. A thorough inspection will disclose the relative value to be considered at various points on the particular rule used. Anyone devoting a little time to reading figures from "space" and "playing" with the rule can discover for themselves its manifold uses which have proven useful in cost finding:—News Print Service Review.

A PARABLE FOR SALESMEN

And in those days, behold there came through the gates of the city a salesmen from afar off. And it came to pass that, as the day went by, he sold large scads of stuff. They that were grouches smiled him and gave him the glad hand. The tightwads opened their purses unto him. And there were buyers who could squeeze a penny until the blood flowed from Caesar's nose. And, behold, even they took the stranger into the Great Inn and filled him with Fine Eats.

And those of the city that were Order Takers, and they that spent their days in adding to the Alibi Sheet were astonished. They said one to the other: "Whattell? How does he get away with it?"

And it came to pass that many of them gathered together in the back of the Inn. And a Soothsayer came among them. And he was one Wise Guy.

And they spake and questioned him, saying:

"Tell us, oh Soothsayer, how come? This man hath come among us from afar off. He goeth about in a flivver from the early morn even until the night, gathering Large Bunches of Goodly Orders, while we who are of the city, behold our Order Books are blank, and we fear to report to the Sales Manager lest he smite us hip and thigh.

The Soothsayer said:

"He of whom you speak is One Hustler. He ariseth very early in the morning and goeth forth full of Pep. He complained not, neither doth he knock. He is arrayed in purple and fine linen, while you go forth with faces unshaven and with holes in your socks.

"While you gather here and say one to the other: 'Verily it is a heluva day to work,' he is already abroad. And when the eleventh hour comes he needeth no Alibi. The poolroom attracteth him not, and the movies he passeth with a look of Cold Scorn on his snoot.

"He smileth alike on the just and the unjust; he sayeth not to the Big Boss, 'Behold they that are in this town are a bunch of Boneheads,' neither does he say, 'Verily, everywhere I have called were they out,' nor doth he report that 'they are all stocked up,' and then console himself in a poker game.

"He knoweth his line, and they that would stave him off, they give him orders. Men say unto him. 'Nay, nay,' when he cometh in, yet when he goeth forth he hath their names on the line that is dotted.

,"He hath taken with him two angels, Aspiration and Perspiration. He knoweth whereof he speaketh, and he worketh to beat the band.

"Verily, I say unto you, 'Go and do likewise!' "

But they answered and said, 'Old stuff, old stuff. Many times have we hard all that bunk."

And they would not, but called for a new deck.—Hardware World.

The lumber cut of the Nashwask Pulp and Paper Company, on the Nashwask River, will be about three times as great as that of last year, it is now estimated. Contracts have been completed, and all the operators' crews are now in the woods with fifteen million feet of logs the objective for their season's work.

A man should not be judged from the results of his labor, but by the nature of his effort.

WHAT CONSTITUTES GREATNESS

Some men are born great, some achieve greatness, and some have greatness thrust upon them. Few there are, however, who attain greatness by their own efforts, unaided and unassisted by others. If we include only those in the last mentioned class we will very soon discover that the number of really great men in the world are few as compared with those whom we commonly refer to as being great.

Undoubtedly, every one of us who reads this, has harbored at one time or is now harboring, somewhere in the innermost chambers of his or her being, a secret desire and ambition to some day achieve greatness in his or her chosen field of endeavors. The man or woman who has not such a desire and ambition to some day achieve greatness will never advance far up the ladder of success. Ambition is the one thing which spurs mankind on to do greater and better things and which causes him to surmount all difficulties in order to accomplish these desires.

Before starting out to fulfill these innermost desires to achieve greatness, let us first determine what qualities in man constitute real greatness. Many are called great in the broad sense of the word, who, if judged by the strictest standards, would fall far short of the qualifications required.

H. G. Wells, noted English writer and author of "The Outline of History," upon being interviewed for an article in the July issue of the "American Magazine" on "The Six Greatest Man in History," said, "He who would be greatest must win his place and hold it by rendering the best and largest service. Without such absorption of one's self in the service of the business the large rewards do not come."

The six men named by Mr. Wells, (Jesus, Buddha, Aristotle, Asoka, Roger Bacon, and Lincoln), as being the greatest in history, were all men who GAVE; not TOOK; and by the spirit of their giving they wrought permanent changes in the thought and lives of many millions after them. According to Mr. Wells, "the historian's test of greatness is not, 'What did he accumulate for himself?' or 'What did he build up, to tumble down at his death?' Not that at all, but this: 'Was the world different because he lived? Did he start men to thinking along fresh lines with a vigor and vitality that persisted after him?"

Of course, few if any of us can ever hope to attain the degree of greatness ascribed to the six men named by Mr. Wells; but nevertheless we can work along the same lines pursued by them and in a small measure make ourselves great, as compared to those who seek only to accumulate and TAKE rather than to GIVE. If each of us will but do our best in performing our daily tasks, and render the greatest possible service to the company employing us, we will be following out the standards set by these men; and in the end, when we come to answer the final summons, those who live after us can truthfully say that we rendered some service and left the world and the plant we worked in, a little better by having done so.

Rendering 100 per cent efficient service to the man or company employing us and forgetting entirely our own selfish desires in our efforts to render service to others, is one of the best ways known to win recognition and praise from our employer and from those with whom we associate. If we persist day after day in being 100 p. c. efficient and in rendering the greatest possible service to others, regardless of our own selfish interests and desires, we may consider ourselves as being a success.

Therefore, using Mr. Wells parting injunction: "He who would be greatest must win his place and hold it by rendering the best and largest service. Without such absorption of one's self in the service of the business the large rewards do not come. We shall see that truth more and more manifest. Therefore we are giving helpful advice, I take it, when we suggest to ambitious men that they make themselves familiar with the lives of the six men we have named. Such reading will give no promise of an easy road to wealth or position, but it will reveal something infinitely more valuable. It will furnish an inspiration to the sort of living that makes for permanent influence through real service. That IS success."

If you have not already done so, get the July "American" and read Mr. Wells' article. It is sure to help you and you may get some valuable pointers.—The Editor of *Mead Cooperation.*

KEEP LUMBER AT HOME

(From The Detroit News).

"Home owning has always been an American ideal. One reason so many Americans have been able to realize that ideal has been the abundance of and cheapness of building material. Houses built of costly material must belong to the few who have wealth or to the landlords.

"From 1870 to 1900 Michigan was producing more lumber than any other state. Cheap lumber and low freight rates made Michigan a state of home owners. But the policy of slashing timber and not replacing it chased the lumber producing area across the continent, and today Michigan is paying more for freight on lumber costs where it is cut.

"Meanwhile the last great timber stand in the United States is on the Pacific Coast. But the experience of rising prices of lumber and declining number of home owners seems to teach us nothing. We still proceed upon the theory that the trees grew because Providence wanted certain lumbermen to make a fortune. Accordingly it is perfectly proper for said lumbermen to cut the trees and market the lumber in the way best intended to make their fortunes quickly.

"Just now the Japanese seem to be the instruments adapted to carry out this purpose. They like lumber and they are buying the best American grades. Statistics furnished by the National Lumber Manufacturers' Association Information Bureau say: 'During the first three months of 1922, the Japanese took 119,000,000 feet of lumber from the State of Washington, and 54,271,000 feet from Oregon. China also is coming to the front as a buyer of American lumber.'

"There is much talk of a forestry policy. In the immediate interests of home building we need much more a lumber policy which will keep for the use of the American people the rapidly failing supply of timber. It is time to forbid sending the best of our lumber to Asia while our people are compelled to pay exorbitant prices for the culls."

PAPER MILL ADDS POWER HOUSE EQUIPMENT

Increased demands for steam have caused the Minnesota & Ontario Paper Company, International Falls, Minn., to equip each of their twelve 326 horse power Brothers, horizontal return tubular boilers with Westinghouse stokers. The equipment consists of three retorts per boiler with double dumping ash grates of the new model type. Each two stokers are driven by a Westinghouse vertical reciprocating steam engine.

Stewart E. Seaman, who during the last few years has had a leading part in the rapid development of cotton linter pulp as a high grade paper making material, has become associated with The Procter & Gamble Distributing Company of Cincinnati, Ohio, in connection with sales of their increased output of cotton fiber pulp. Mr. Seaman was formerly connected with the Stamsocott Company of Hopewell, Va.

COST ASSOCIATION OF THE INDUSTRY

Tentative Program of Eighth Semi-Annual Convention

To be Held at Nonotuck Hotel Holyoke, Mass November 9th, 10th, 11th 1922

This will be a gathering of representative pulp and paper cost accountants throughout the country and mills are urged to send representatives irrespective of the fact whether they are affiliated with this association or not.

Thursday, November 9, 1922

9:00-10:00 A.M. Registration

10:00 A.M. Business Meeting
Address—President Seth L. Bush "The Cost Accountant — His Past, Present and Future Place in the Pulp and Paper Industry."

2:00 P.M. Address—J. A. Reilly, Manager, Cost and Inventory Dept. American Writing Paper Co., Holyoke, Mass. "Standard Basis for Comparative Cost Estimates."
Standard cost estimate forms will be submitted and explained and the entire session will be given up to a thorough discussion of this subject.

7:00 P.M. Banquet
An orchestra will be in attendance and arrangements are being made for representative speakers. *Please make reservations early!* Tickets $5.00.

Friday, November 10, 1922

9:30 A.M. Address—
Harold Dudley, Greeley C. P. A. Treasurer, National Association of Cost Accountants. "The Use of Ratio Charts in Business."—
Mr. Greeley will give an address illustrated by large charts to show how ratios may be used in business management. As executives become more interested in costs, it is becoming necessary for cost accountants to be able to devise charts which will enable the executive to grasp the essential facts quickly and ratio charts provide an excellent medium for this purpose.
Address—G.A. Ware, A. C. A. Assistant Secretary, News Print Service Bureau.
"The Value of Comparative Costs."— The News Print Service Bureau for some years past has been doing excellent work for the newsprint paper manufacturers by collecting and distributing data relating to conversion costs. This work has been done with the knowledge and approval of the various Government departments, and its usefulness to the newsprint manufacturers cannot be over estimated.

2:00 P.M. "Round Table" Group Conferences.
Separate meetings will be held by the following groups of cost accountants:
Writing & Cover, Tissue & Toilet Paper Converters, Book, Wrapping and Paper Board.
These talks will be led by the members of the various cost committees appointed by this Association, of which the following are Chairmen:
Writing & Cover, J. A. Reilly
Tissue & Toilet Paper Converters, E. J. Fitzgerald
Book, H. C. Bradford
Wrapping, A. M. VanDouser
Paper Board (No Committee has been formed in this section but a representative of Miller, Franklin, Basset & Co. who have designed a complete cost system for Paper Board manufacturers will be present to give details of and answer questions relating to this system.
These groups will meet for the purpose of enabling cost accountants in each to discuss freely the problems relating to their own particular group, in connection with the scheme proposed by the Cost Association for the purpose of collecting conversion costs on a comparable basis. Any other groups which may decide to hold a separate meeting should communicate me immediately, as whenever six or more in our group signify their intention to attend the Holyoke Convention, I will arrange for separate meetings for them also. These meetings will be extended over until Saturday morning if necessary, thus allowing plenty of time for a full discussion.

Saturday, November 11, 1922

9:30 A.M. "Round Table" Group Conferences.

2:00 P.M. Mill Visits
Post Cards should be forwarded as soon as possible to me by all those intending to attend Convention also particulars given if they wish to visit mills in Holyoke. Arrangements will be made for sufficient automobiles to be in attendance to take care of all those wishing to make these visits, but it is essential in order that proper arrangements may be made that we shall have full particulars from those wishing to make these visits at the earliest possible date.

PAPER INDUSTRY BACK TO NORMAL

New York, Oct.—"The paper industry has returned to normal production after the depression of 1921," says the monthly market review of the American Paper and Pulp Association in "The Paper Industry," the Association's monthly bulletin to its members. "This is the outstanding feature of the statistics for 1922, now sufficiently advanced to indicate the probable total production of the current year, which will be at least 6,800,000 tons if not more.

"The figures for the first eight months of 1922, show that production and shipments were the largest for twenty three months, and only slightly under the figures for September, 1920. Production is now equal to normal consumption, and this year's production for the first eight months was 37 percent higher than for the same period last year.

"The cost of producing all grades of fine paper has advanced steadily and has resulted in a recent increase, by some mills, in the price of their finished products. All grades of pulp have recently advanced in price. Prices of paper stock are so high that it is out of all proportion to any other fibre, and it has been reported to cost more at the heater, in a book mill, than bleached sulphite. Writing paper production for the first eight months of 1922 is about equal to the production for the entire year of 1921. The production of Book and Tissue papers in the first nine months of this year has approximately equally all of last year's production of these grades. Newsprint consumption in 1922 will be about 13 percent larger than in 1920.

"According to the Department of Commerce survey of current business, production in August increased in all grades, with stocks declining, causing prices to show a tendency to slight advances."

PULP AND PAPER NEWS

Charles V. Syrett, of the Victoria Paper & Twine Company, has been elected vice-president of the Garrison District Business Men's Association in Toronto which is to be presided over by E. B. Collett, of Colett & Sproule, paper box maufacturers, Portland Street. The Association will interest itself in matters pertaining to the Garrison district, including business and social service.

Hon. W. E. Raney, Attorney-General, speaking before the young men's section of the Toronto Board of trade, this week, defended the action of the Ontario Government in the Backus deal and outlined the history of the pulpwood industry in Kenora. He pointed out that Government had increased the rates on pulpwood to double those previously in force, and had insured permanent benefits to the people of that district in cheap power. He contended that had the Backus agreement not been signed the millions spent by those interests in the English River limits would have been a dead loss, and the town of Kenora would probably have ceased to exist, dependent, as it was, on the lumber industry. According to the Attorney-General the town was now a thriving and important community as a result of the agreement.

A. P. Costigane, engineer for the Ontario Pulp and Paper Makers Safety Association, has just returned from a periodical visit to the pulp and paper mills in the Niagara Peninsula. While away he visited the Provincial, Kinleith, Lincoln and Interlake Mills.

Col. Thomas Gibson, Vice-President of the Spanish River Pulp and Paper Mills, Limited, Bank of Hamilton Building, Toronto, is spending some time in New York on business.

Excellent progress is being made with the installation of the two new paper-making machines in the plant of the Fort William Paper Company, Limited, at Fort William. The two machines will have a capacity of 160 tons of newsprint daily. One of them is expected to be in operation during the fall and the other along about the first of the year.

The offering of $350,000 bonds of the Pacific-Burt Company, Limited, recalls the fact that S. J. Moore, Toronto, the president of the Company first became interested in the manufacture of counter check books, sales slips, etc. some forty years ago. Mr. Moore is also president of the American Sales Book Company, which are the largest sellers of counter check books and kindred products in the world, while he is also head of the F. N. Burt Co., Limited, which, in addition to its main function — that of the manufacture of paper boxes in Canada and the United States, also manufacture counter checks in Canada and across the border. As consumers of paper Burt's enterprises are among the largest on the continent.

H. Grady, who was for several years with the Cliff Paper Co. at Niagara Falls, has entered upon his duties as superrintendent of the new pulp mill of the Temiskaming Pulp & Paper Company at Dixon Creek, near Haileybury. The company is reported to be running to capacity and is finding a ready market for its output.

J. B. Brown, of T. B. Little & Co., Limited, wholesale paper jobbers, Montreal, was a business visitor in Toronto this week.

Sales Manager Johnston, of W. D. Dawson, Limited, paper dealers, Montreal, called on the Toronto paper trade during the past week.

William Zieman, formerly General Superintendent of the Abitibi Mills, and now with the George H. Mead forces of Dayton, Ohio, was at the King Edward Hotel Toronto for a couple of days this week.

The Canadian Barking Drum Company report the following installations of barking drums of late through their Toronto and Chicago offices: Hawk Lake Lumber Company, Monteith, Ont.; Howard Smith Paper Company, Cornwall Degrasse Paper Co., Pyrites, New York: New York and Pennsylvania Co., Johnsonburg, Penn.

W. C. Thuerck, dealer in pulpwood, lost his house and a camp with supplies he had recently established, in the recent disastrous fire that swept the north country.

Charles Allen, of the Allen Paper Company, Simcoe Street, Toronto, has just completed his new house at 23 Rose Hill Avenue and will shortly move in from Woodbridge where he has been spending the summer.

The Parkdale Paper and Twine-Company, which for some time has been operating at 1216 Dundas Street West, Toronto, has gone out of business.

Percy B. Wilson, Vice-President of the Spanish River Pulp and Paper Mills Company, and a past president of the Canadain Pulp and Paper Association, has gone on a trip to England.

W. H. Sherriff, of the Wayagamack Pulp and Paper Company, Limited, Toronto, left this week on a business trip through the Canadian west to Vancouver.

R. B. Herron, of R. B. Herron & Co., Tionaga, reports considerable pulpwood activity on the Canadian National Railways west of Sudbury. His firm is taking out 20,000 cords of pulpwood for the Spanish River Mills. The Anglo-Canadian Lumber Company, of Stackpool, are also taking out several thousand cords for the same company.

The Allen Paper Company, Toronto, is doubling its floor space at 105 Simcoe Street and is taking in the remaining half of the floor which has been occupying during the past year.

S. R. Armstrong, Vice-President of the Metagami Pulp and Paper Company, has returned to Toronto after visiting the company's mill at Smooth Rock Falls. Mr. Armstrong reports that the plant is running to capacity with a good demand for the company's products.

Mr. S. Rodier, of the Rolland Paper Company, Limited, Montreal, who was seriously injured in an automobile accident, is making very favorable progress.

In connection with the pulp and paper plant to be erected near Elko, B. C., by the Wigwam Pulp and Paper Company, a contract for cutting pulpwood has been let to the McNab Logging Company, organized by Mr. C. D. McNab, of Walde. The contruction engineer for the plant is Mr. A. C. R. Yuill.

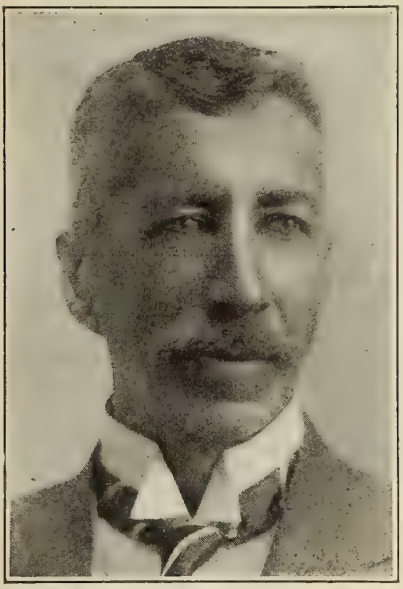
The offices of the Rolland Paper Company Limited, Notre Dame Street, Montreal are being enlarged.

The Snelling Paper Sales Limited. Ottawa, has been incorporated with a capital of $40,000.

EDDY COMPANY OFFICIALS PLEASED WITH OUTLOOK

That Canada is about to enter a new era of prosperity in the immediate future is the opinion of Mr. J. T. Shirreff, Vice-President and Assistant Manager of the E. D. Eddy Co., Limited, Hull, Canada.

Mr. Shirreff's optimism is based upon first hand knowledge gleaned during his recent tour of Western Canada. Accompanied by Mr. J. F. Taylor, Secretary and Sales Manager of the Eddy Companp, Mr. Schirreff visited every important centre west of the Great Lakes, calling upon their many selling agencies throughout this vast territory. Both executives were impressed with the spirit of optimism apparent in every quarter of the West and report that, consequent upon the excellent crops now harvested, there is every indication of a real boom in Fall and Winter business throughout the entire Dominion.



MR. SHIRREFF

MR. TAYLOR

As proof of this it is interesting to nate authentic statement that the E. B. Eddy Company is even now being operated at capacity.

The increasing demand for Eddy matches, indurated ware and the other products produced at the big Hull plant where between 2.000 and 2.500 people are employed would seem to indicate that competition only serves to still further popularise Eddy lines with the Canadian People.

Some idea of the tremendous Eddy output may be derived from the fact that upwards of 125,000.000 matches are produced every day in addition to some 125 tons of paper, 100 of wrapping paper and fibre ware utensils galore.

COMBINATION CALENDER AND REWINDER AT ONTARIO PAPER CO

An interesting innovation in paper machinery has been installed at the Ontario Paper Company, Thorold, in the form of a combination supercalender and rewinder.

It has a stack of eight rolls, the face width being 135″. It takes a 130″ roll of newsprint, supercalenders it in the usual manner, then it is rewound on a re-winder complete with slitters. It has a full load speed of 650 feet per minute, requiring 80 to 90 H.P., and equipped with a 100 H.P. motor. This is the largest supercalender ever made by the Norwood Engineering Company, and the first combination supercalender and re-winder to be used in a newsprint mill, although the Kimberley Clarke Company of Niagara Falls, N. Y. use such a machine, 120 inches wide, for book, writing and specialties. The machine at the Ontario Paper Company requires a crew of three men to operate it.

An addition is being made to the mill for a finishing room behind No. 5 Machine, a two story brick building 60′ x 160′. A grade is being made up to the finishing room to accommodate three cars, in duplicate of the other finishing rooms. The output of the mill at present is about 285 tons per day, all of which goes to the Chicago "Tribune." The main pulpwood limits of the Company are 300 miles below Quebec. Those in Northern were not touched by the recent fires.

Four machines at the Ontario were manufactured by Pusey & Jones, while No. 5 machine recently installed is a Bagley & Sewall. Nos. 1 and 2 operate at 600 feet per minute, Nos. 3 and 4 at 650 feet per minute, and No. 5 is at present running at 715 feet. No. 5 machine was started at 450 feet and gradually increased t othe present speed, the maximum up to the present being 800 feet. It was designed for a speed of 1,000 feet per minute. An interesting feature of No. 5 machine is the pitch of 30″ downward on the wire, the other four machines having only 18″.

NEW CATALOG AVAILABLE

The Canadian Link Belt Company Limited, Toronto, have just issued a new 832 page general catalog which they advise is the most complete and costly they have ever issued. This catalog includes their new line of Helicoid Screw Conveyors, Machine Moulded Gears, etc., and will undoubtedly prove of great value to all interested in elevating, conveying, power transmission and labour saving machinery in all its modern forms.

This catalog includes complete line of the H. W. Caldwell & Sons Company's Plant of the Link-Belt Company. It is available on application to their Toronto Office, Wellington & Peter Streets or Montreal Office 10 Gauvin Lane to anyone who will state their connection with the industry.

Technical Section

REVIEW OF RECENT LITERATURE

A.-Properties and Testing of Materials

A-15. Hydrolysis of Cotton Cellulose. G. W. MONIER-WILLIAMS. **Chem. Soc. Trans.**, cxix, 803-805, (1921). Crystalline "glucose" representing 10.67 per cent of the yield theoretically obtainable from the crude material (containing .93 per cent moisture and 0.13 per cent ash,) was obtained by hydrolysing 10 g. of cotton-wool with 50 cc. of 72 per cent sulphuric acid for one week at room temperature, diluting with water to 5 liters, and boiling under a reflux condenser for 15 hours. After filtering and evaporing to dryness at 40 mm., the alkalinity being kept down by repeated addition of decinormal sulphuric acid the residue was extracted with methyl alcohol free from acetone, and the extract filtered, decolorized with animal charcoal, and evaporated in a current of dry air at a low tempeature. The product has a melting-point of 144 to 145 degrees C. (uncorrected and yielded a phenylosazone with melting-point 204 to 205 degrees (uncorrected). No other products of hydrolysis could be detected. (Compare OST and WILKENING, **J. Soc. Chem. Ind.**, xxix, 88, (1910), IRVINE and SOUTAR, This journal, xix, 1005, A-15, Sept. 29, 1921. A. P. C.

B.-Forestry

B-O. Forestry in Sweden. EDWARD BECK, Publicity Dept., Can. Pulp & Paper Association. **Pulp and Paper**, xix, 685-686, 715-716, 737, 761-762, (June 30 July 7, 14, 21, 1921); **Paper**, xxix, No. 7, 19-21 (Oct. 1921; (Oct. 19, 1921). A description of the manner and means obtaining in Sweden for utilizing their forest resources to the best advantage and to ensure their permanency, contrasting these means with those employed in Canada.—A. P. -C.

B-O. Forestry in Finland. EDWARD BECK, Publicity Dept., Can. Pulp & Paper Association. **Pulp and Paper**, xix 785-786, (July 28, 1920). Discussion of the importance of the forest in the economic development of Finland, with an outline of the forestry policy of that country.—A. P. -C.

B-O. Forestry in Norway. EDWARD BECK, Publicity Dept., Can. Pulp and Paper Association. **Pulp and Paper**, xix, 811-812, (Aug. 4, 1921). Brief discussion of the importance of the forest in the economic life of Norway, together with an outline of the forestry policy of that country.—A. P. -C.

B-O. Forestry In Britain. EDWARD BECK, **Pulp and Paper**, xix, 829-831, (Aug. 11, 1921). An analysis of the requirements of the British Isles in wood and wood products and of the present state of the forests, together with an outline of the forestry policy and of the work accomplished by the Forestry Commission since it was created in 1919 on account of the very serious conditions brought about by the intensive felling which had to be resorted to during the war.

B-O. Forestry in France. EDWARD BECK. **Pulp and Paper**, xix, 855-856, (Aug. 18, 1921). Brief outline of the damage wrought to French forests during the war and of the work which is being carried out with a view to restoring them to their former state of productivity.—A. P. -C.

E.-Acid Pulping Processes

E-1. Determination of Sulphur Dioxide in Burner Gases. E. BERL. **Chem. Zeit.**, xlv, 693, (1921); **J. Soc. Chem. Ind.**, xl, 580A, (Aug. 31, 1921). (Compare preceding abstract.) The absorption of sulphur dioxide from gas mixtures containing it in the presence of oxygen by means of caustic soda, yields low results, especially if the liquid is shaken vigorously or contains positive catalysts, such as copper sulphate. Good results are obtained, on the other hand, by the addition of small quantities of negative catalysts, especially stannous chloride. It is recommended to add to each assay 10 cc. of a 0.001 molar solution of stannous chloride (0.23 g. of $SnCl_2$. $2H_2O$ per liter) before absorption. The gases are passed through the liguid, which is then acidified and titrated with iodine in the usual way.—A. P. -C.

E-1. Determination of Sulphur Dioxide (and Sulphur Trioxide) in Burner Gases. B. C. STUER and W. GROB. **Chem. Zeit.**, xlv, 553-554, (1921); **J. Soc. Chem. Ind.**, xl, 56A, (July 30 1921). A SANDER **Ibid.**, 555. The authors dispute Sander's contention that mercury has a strong catalytic action on mixtures of air and sulphur dioxide; the high percentage of sulphur trioxide found by him in burner gases is more probably due to oxidation when sulphur dioxide is absorbed by sodium hydroxide, as in his method. (of **Paper**, xxvii, No. 14, Dec. 8, 1920; this journal, xix 723, E-1, July 7, 1921). In a determination of sulphur trioxide by difference, after estimating sulphur dioxide by Reich's method and total acidity by Lunge's method, 0.4 per cent was found, whereas Sander's method gave 2.8 and 2.3 per cent. The latter figures are regarded as erroneous. In a reply Sander contends that if the sulphur dioxide is introduced into the alkali in a fine stream, and agitation is avoided, appreciable oxidation of the sodium bisulphite will not take place. He further maintains that his results for sulphur dioxide are in close agreement with those obtained by the Reich method and that therefore the sulphur trioxide value, which is derived from the difference between total acidity and sulphur dioxide figures, must also be correct.—A. P. -C.

E-4. Chemical Equilibrium of Sulphite Liguor. R. SCHWARZ and H. MULLER-CLEMM. Z. angew. **Chem.**, xxiv, 272-275, (1921). Translated by W. B. Van Arsdel in **Paper**, xxix, No., 3, 1914, (Sept 21, 1921) From a study of the conditions of equilibrium between sulphurous acid and calcium bi-sulphite in presence of an excess of calcium sulphite it is shown that in this system, at any temperature, and independent of the initial concentration of sulphurous acid up to 6.5 per cent before the addition of the calcium sulphite, the quotient of the combined sulphurous acid by the free sulphurous acid is a constant, namely 2. At higher initial concentrations than 6.5 per cent experimental difficulties occurred owing to the evolution of gas as so on as calcium sulphite was added to the solution. and the equilibrium was thereby disturbed. In the equilibrium solution the quantity of bisulphite formed and the free sulphurous acid increase with decreasing temperaturee except that irregularities occur between

30 and 22 degrees Centigrade which result in an intermediate or local minimum solubility of calcium sulphite at 26 degrees, followed by a decline to 22 degrees, after which the regular increase once more sets in. If a solution in equilibrium at a particular temperature is saturated with sulphur dioxide an increase of combined sulphurous acid occurs, accompanied by a proportionately greater increase in free acid.—A. P. -C.

E-4. Chemical Equilibrium of sulphite Liquor. R. SCHWARZ and H. MULLER-CLEMM. **Z. angew. Chem.**, xxxiv, 599-600 (1921); **J. Soc. Chem. Ind**, xl, 9A, (Jan. 16, 1922). The conclusions drawn in a previous communication (compare two preceding abstracts) are now admitted to be incorrect. The quotient of combined sulphurous acid by free sulphurous acid is not constant but depends on the temperature. It falls with increasing temperature to 24 deg. C., and then increases again on further temperature rise. In the temperature range 20 to 33 deg., the maximum for free sulphurous acid lies at 24 deg. C., for combined acid at 29 deg., and for total acid at 26 deg. The quotient also depends on the initial concentration of sulphurous acid, increasing from 2.0 at the highest examined concentration (6.5 per cent) to 4.2 at 2 per cent.—A. P. -C.

E 4. Chemical Equilibrium of Sulphite Liquor. M. GROGER. **Z., angew Chem.**, xxxiv, 383, (1921); **J. Soc. Chem. Ind.**, xl., 580A, (Aug. 31, 1921). (See preceding abstract) The author has recalculated from the figures given by Schwarz and Müller Clemm the ratio between the combined sulphurour acid and the free sulphurous acid in equilibrium in the system sulphurous acid-calcium sulphite, and shows that it is 2.36: 1 and not 2: 1 as found by the latter authors. —A. P.-C.

G — Treatment of Pulp

G-8; K-12. Drying in the Paper Industry. Papeterie, xliii, 686-689, 726-739, 777-781, 822-826, 870-877, 921-922, (Aug. 10, 25, Sept. 10, 25, Oct. 10, 25, 1920). A study of drying in the paper industry, including air drying and drying by direct contact with a heated surface, calculation of the drying sylinders, the effect of drying on the finish of the paper, the defects due to faulty drying, with a very brief description of various types of moisteners. — A.P.-C.

K.-Paper Manufacturing and Equipment.

K-4., The Treatment of Rags — Defibering and Shredding. PORPHYRE. **Papeterie,** xliii, 626-633, (July 25 1921). A discussion of the merits of shredding rags before cooking them, instead of defibering them after cooking, showing that there is greater production, lower consumption of fuel chemicals and power, lower initial cost for the equipment.—A. P. -C.

K-12. The Use of Ball Bearings for Table Rolls on Paper Machines. H. BURSIE, Technical Director, Société des Roulements à Billes SKF. **Papeterie,** xliii, 640, (July 25, 1921). The author takes exception to the statement of Nuttall at the meeting of the English Technical Association to the effect that table rolls mounted on ball bearings do not run smoothly, and that those paper manufacturers who had tried them were going back to smooth bearings. Theoretically ball bearings are superior to smooth bearings, and in practice if they are properly mounted they give entire satisfaction. The only reason for failure of ball bearings for table rolls would be incomplete protection from water, causing rust and wear of the balls. In Sweden all the new paper machine table rolls are mounted on ball bearings and are giving entire satisfaction.—A. P. C.

M. — General Equipment

M-6. The Care and Upkeep of Electrical Equipment for the Paper Mill. W. W. CRONKHITE, General Electric Co. **Pulp and Paper,** xvii, 793-794, (Sept. 18. 1919); **Paper.** xxvii, No. 132-134, 234, (Nov. 10, 1920). Advice about the proper attention and care which should be given to electric motors.—A. P. -C.

M-11. The Proper Lubrication of Ball Bearings. H. BURRIE, Société des Roulements à Billes SKF. **Industrie Chimique,** viii, 276-277, (July 1921). The function of lubrication in ball bearings is protection against corrosion and facilitating the longitudinal motion of the journal when such is required. The lubricant must be free from acids or alkalis (maximum 0.1 per cent), lime (maximum 0.5 per cent) and resins and from all traces of impurities which might cause friction. The best lubricant is a high grade oil of suitable viscosity (depending on the nature of the work). If grease is used, it must not melt at the working temperature of the bearing, Graphite should never be used in ball bearing lubricants. Simple tests for detecting acidity, alkalinity, and resins, and for determining the melting-point are given.—A. P. -C.

M-11. Lubrication of Paper Mill Machinery. JOHN E. TESCHNER. **Paper,** xxvii, No. 10, 125-127, (Nov. 10, 1920). A brief description of the various kinds of lubricating systems, of the bottle oiler and the wick feed oiler, together with a tabulated summary showing the kind of lubricant which should be used for each of the various machines of a pulp or paper mill, methods by which the lubricant is commonly applied, and the department of the mill in which the machines are to be located.—A. P. -C.

M-11. The Mechanism of Lubrication.-11. ROBERT E. WILSON and DANIEL P. BARNARD, 4th, Mass. Institute of Technology. **J. Soc. Automotive Eng.; J. Ind. Eng. Chem.,** xvi, 683-695, (Aug. 1922). "Oiliness" is defined as that property of lubricants by virture of which one fluid gives lower coefficients of friction (usually at slow speeds or high loads) than another fluid of the same viscosity. Its importance under practical operating conditions is shown to be greater than is generally recognised. The following possible methods of measuring oiliness and of throwing light on the mechanism of partial lubrication are described; (1) Use of a Deeley type machine to measure coefficients of friction between plane surfaces at slow speeds; (2) A refined and reproducible method of determining static coefficients of friction between partially lubricated metal surfaces; (3) Measurement of interfacial energy between mercury and oil; (4) Measurements of the electrical resistance and the rate of formation of adsorbed films on metal surfaces; (5) Clogging of fine metal capillaries through which lubricants are forced. The static friction test with proper refinements is considered to be the best single measure of oiliness, but it should be supplemented by measurements of the thickness of the adsorbed films at high pressures, in order to throw more light on the mechanism of the action of different constituents in lubricating oils. Animal and vegetable oils are almost invariably superior in oilness to straight mineral oils. The blending of considerable proportions of neutral glycerides with mineral oils greatly improves the oili-

(Continued on page 939)

UNITED STATES NOTES

The Customs Division of the Treasury Department is investigating complaints alleging the shipment of Kraft paper for the United States by Scandinavian countries in violation of the provisions of the anti-dumping clause of the Emergency Tariff Act. One complaint made was that paper was being offered for exportation to the United States at a price lower than it was selling for in the Scandinavian domestic trade or for export to countries other than the United States. The Customs Division has sent agents who were in Germany to Scandinavian countries to make the investigation. There is no record, as yet, in Washington of action being taken against exporters or importers in connection with the investigation.

The plant of the Jespersee News Print Corporation, Lambertville, N. J., was destroyed by fire last Friday with a loss estimated at $300,000. The mill and plant was acquired only recently by the Jespersee Corporation from the Perseverance Paper Company.

Adam L. Lewis, of Toronto, Ont., in a talk at the annual convention of the United Typothetae of America at Cleveland, O., last week, declared that the printing industry is over-equipped, and that out of 13,000 commercial printing plants in the United States only 1,200 do more than $100,000 worth of work in a year. These 1,200 plants, however, do two-thirds of asserted. He argued that the large plants must carry the work of the nation, or $400,000,000, Mr. Lewis the responsibility for improving and eliminating price-cutting, since the they the only ones which can afford the effort. The only solution to overcome the printing industry's serious over-equipment, he pointed out, is to create a demand for printing. That can be done in part by improving the quality of printing, and by advertising printing.

Serviceable drinking cups from waste paper pulp can be made at the rate of a ton a day by a single laborer and at a cost of about 80 cents a thousand, according to C. R. Robinson of Brookklyn, N. Y. who claims he has perfected a process for making them in the plant of the J. A. Wiarda Company of Brooklyn. The finished cup is said to contain no paraffin and is capable of holding hot solutions as well as cold. The machinery used in the manufacture of the cups is described by Mr. Robinson as being a type designed for continuous automatic operation. It uses a form made from paper machine wire the inside of which contains a suction drawing the pulp to the mould and so forming the cup. Patents on the machinery have been applied for by Mr. Robinson.

The production of new paper from waste paper has preserved more than 300,000 acres of timber this year in the United States for future use, declared Grellett Collins of Philadelphia, president of the Book Manufacturers Association, in his address at the opening of the association's convention in Chicago last Wednesday. "The biggest problem of the paper industry," he said, "is the shortage of waste paper. To save waste paper is to save the forests. Every ton of waste paper used by the paper millls means just so much of our forest resources saved for the future. Taking good pulp wood as an example, it can be said that use of six tons of waste paper is equal to saving one acre of timber. This is no small matter when it is considered that the paper industry will use in 1922 nearly 2,000,000 tons of waste paper."

The Port Edwards mill of the Nekoosa-Edwards Paper Company is trying out a machine invented by M. J. Powers of Nekoosa which is designed to prepare pulpwood bark so that it may be converted into a practical fuel. It is claimed that the device has shown results affording a solution of the problem of disposing of the bark which was formerly dumped into the rivers as waste until this practice was prohibited by the States because of alleged stream pollution. Mr. Powers' machine is known as a plunger press in which a huge plunger compresses the moisture from successive loads of bark.

Work is in progress at the South Brewer plant of the Eastern Manufacturing Company on the installation of equipment transforming the mill for the use of oil instead of coal as a fuel. The Eastern has been burning 62,000 tons of coal yearly and 240,000 barrels of oil will be needed in place of this.

Maine logging camps are taking on men for the winter season. The International Paper Company is Advertising in Boston for more men. It needs 500 for its camps in Maine, Vermont and New Hempshire. Many other companies, not only the Great Northern Paper Company, are still hiring men to cut pulpwood in Maine

The Burnside Tissue Mills, Inc., of East Hartford, Conn., has gone into the hands of a receiver. Claims are made on behalf of the corporation that it is solvent with assets amounting to $400,000 and liabilities of about $300,000. The receiver was appointed on the petition of R. S. Peck & Co., Inc., of Hartford, Conn., which firm is a creditor to the amount of $17,252.

The work of erecting a new paper mill, filtering plant, storage warehouse and numerous residences at the Parchment plant of the Kalamazoo Vegetable Parchment Company is progressing with a great rush. Extra gangs of laborers have been put to work in the endeavor to get all the outdoor construction jobs completed before heavy snows of winter arrive. A large settling tank with 14 apartments, designed to handle the white water from the No. 1 mill, has been erected in the mill court-yard. Jacot Kindleberger, president of the company, announces that this tank is the result of a combination of minds and is designed to reclaim stock that is now going to waste. "Some of the ideas embodied are our own," said Mr. Kindleberger. "Others were developed during my recent trip to mills in Germany."

A new hand book of paper and its uses has just been issued by the American Writing Paper Company. It consists of a catalog of information and a sample folder made up of three separate parts each of which contains a full line of samples of various papers and grades. A price lists is included in the catalog.

The Allied Paper Mills, Kalamazoo, announce that Samuel W. Simpson has been advanced to the position of general superintendent of the Allied Mills, with offices at the King Division. William Carroll, the assistant superintendent of the Bardeen mills will succeed to the place vacated by Mr. Simpson.

With the new paper mills planned and under construction there shoul be no need for publishers to go beyond America for their 1923 newsprint requirements, said R. S. Kellogg, Secretary of the News Print Service Bureau, in an address last week before the Inland Press Association at Chicago. Newsprint importation of 135,000 tons from Europe in 1921, has fallen away, declared Mr. Kellogg, and new mills and additions in the United States and Canada will go into operation next year with a capacity of 600 tons daily.

ness of the latter; but the same results can be obtained by adding much smaller proportions of fatty acids or oil-soluble soaps. (Compare H. M. WELLS and J. E. SOUTHCOMBE. **Advances in the Practice of Lubrication.** This journal, xx, 262, March 30, 1922). Oiliness is due to selective adsorption of the constituents in the oil by the metal surface. The adsorbed film is of colloidal rather than molecular dimensions, is a plastic solid rather than a fluid film, and apparently acts by smoothing over surface irregularities, carrying much of the load and minimizing metal to metal contact and abrasion. The structure and physical characteristics of this film seem to be more important than its thickness in determining its efficiency in lowering friction. The constituents of lubricants which form these adsorbed layers may be selectively adsorbed and largely removed from the oil by repeated treatments with very finely-divided metals, e. g., iron-by-hydrogen—A.. P. -C.

M-12. A Liquid Measuring Guage: the Pneumercator. Paper, xxvii, No. 10, 116, (Nov. 10, 1920). A brief description of the principle, construction, operation, and merits of the Pneumercator.—A. P. -C.

M-12. The Arca Consistency Regulator. Paper, xxvii, No. 10, 220, (Nov. 10, 1920). The Arca regulator is a device for automatically reducing valves and cutting down the supply of steam. By a slight modification it can be used as a stock consistency regulator. This latter form of the device is briefly described. (See **Pulp and Paper,** xviii, 926, Sept. 2, 1920). — A. P. -C.

Power Generating and Equipment

N-1. Apparatus for Analyzing Flue Gases. U. S. Patent No. 1,299,865, H. M. SSARP. An apparatus for the analysis of flue gases comprising an electric circuit with a reservoir containing a conducting liquid, electrodes suitably disposed in the circuit and placed in the reservoir, and a supply pipe whereby the gases can be led into the conducting liquid, thereby displacing it relatively to one of the electrodes.—A. P. -C.

N-4. The Corrosion of Steam Boilers and its Prevention by the Elimination of the Gases Dissolved in the water. G. PARIS. **Chimie et Industrie,** vi, 11-32, (July 1921). —A.P.-C.

N-4. A New Mercury Boiler. Paper, xxvii, No. 10, 119, (Nov. 10, 1920). A brief description, with diagram, of the mercury boiler designed by W. L. R. Emmett.—A. P. -C.

N-4. The Refractory as a Factor in Furnace Life and Capacity. I. S. PIETERS, Jointless Fire Brick Co. **Paper Trade J.,** lxxv, -No. 3, 36, 38, (July 20, 1922); **Pulp and Paper,** xx, 647-648, (Aug. 3, 1922). The requirements of a modern furnace lining are refractoriness, physical strength, surface hardness, low expansion and contraction coefficient over a wide temperature range, low heat conductivity, and imperviousness to air. No one material can meet them all, so that the practice now is to make furnace walls and settings of 3, 4, or more materials, each of which serves a distinct purpose. The drawbacks of bricks linings and the troubles to which they give rise are outlined, and the merits of a monolithic (i. e., one-piece, jointless) lining are described.—A. P. -C.

N-6. An Economically Efficient Paper Mill Steam Plant. Pulp and Paper, xx, 718-719, (Aug. 24, 1922); **Paper Trade J.,** lxxv, No. 10, 43-44, (Sept. 7, 1922); **Paper Mill,** xlv, No. 34, 4, (Sept. 2, 1922). Results are given of operation for six months of the Canada Paper Co.'s new boiler plant at Windsor Mills, Que., supplemented by explanatory notes and remarks on the efficiency of steam plants.—A. P. -C.

N-8. A New Electric Generating Apparatus. Paper, xxvii, No. 10, 115, (Nov. 10, 1920). A description of a new generating apparatus constructed by the Dodge Sales and Engineering Co., Mishawaka, Ind., which is run by the Dodge heavy oil engine, and which can be run at a fuel cost (with fuel oil at $0.05 a gallon) of $0.005 per K. W. hr.—A. P. -C.

O—Water supply and treatment

O-2. A Study of the Fundamental Laws of Filtration Using Plant Scale Equipment. FRED P. BAKER, Mass. Institute of Technology, Cambridge, Mass. **J., Ind. Eng. Chem.,** xiii, 610-612, (July 1921). A study of some of the factors determining the capacity of a filter-press, using, commercial size filters, showing the applicability of a sample fundamental equation expressing the relationship between rate of flow, pressure, and thickness of cake, and showing also the proper way of increasing the pressure and the most efficient cycle length. The fundamental law of filtration is $\frac{dV}{d\theta} = \frac{KA^2P^n}{V^m}$ in which $\frac{dV}{d\theta}$ is the rate of flow, **K** is a constant, **A** is the filtering area in square feet, **n** is a constant dependent on the nature of the sludge, **V** is the total volume in cubic feet of liquid which has been filtered, and **m** is a constant which is very close to 1.0. The method of using the equation to determine the constants **K, m, n** is illustrated by an example, and it is then shown how to calculate the size of a filter which is to have a given capacity. Curves are given which demonstrate clearly the superiority of a constant rate of flow over constant pressure when there is a compressible solid in the sludge. —A.P.-C.

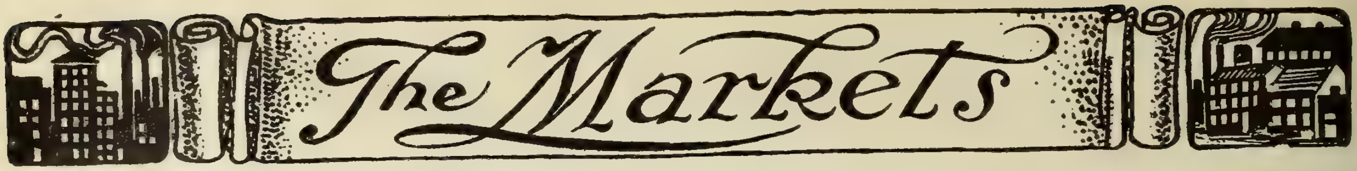
O-2. Filtration in the Art of Paper Making. A. M. CRANE, New York Continental Jewell Filtration Co. **Paper,** xxvii, No. 10, 182, 184, 226, 238, (Nov. 10, 1920). A brief description of the various types of filters marketed by the Jewell Filtration Co.—A. P. -C.

O-3. We-Fu-Go Water Softening and Purifying System. M. F. NEUMAN, Wm. .B. Scaife & Sons Co **Paper,** xxvii, No. 10, 170, 172, 268, (Nov. 10. 1920). Description of the system and of the principles on which it is based.—A. P. -C.

R. — General

R-1. Purchase and Erection of Engineering Equipment. A. S. LOIZEAUX. **Power; Paper,** xxvii, No. 10, 24-5, 232, 268, (Nov. 10, 1920). A discussion of the following points in the purchase and erection of engineering equipment: determination of the work to be done by the equipment; choice of the general character of the equipment to do the required work; specifications to cover construction and performance of the various parts of the structure and equipment; contracts to cover price, terms of payment, time and point of delivery, erection and initial operation; following up manufacture, delivery and erection, inspection of material and equipment, and necessary testing to insure that all terms of the contract are fulfilled. —A.P.-C.

R-2. Bibliography of the Pulp and Paper Industry, Second and Third Quarters, 1921. C. G. SCHWALBE. **Zellstoff u. Papier,** i, 261-274, (1921); **Chem. Abs.** xvi, 827, (March 10, 1922). Classified references with brief abstracts. — A.P.-C.



CANADIAN TRADE CONDITIONS

Montreal, Oct. 24.—The local paper trade is good, jobbers reporting that oredrs are coming in more freely, despite the advance in prices. After making this statement, it seems almost a paradox to assert that the printing business is dull and that some shops are only working three days a week. Yet such is the case; the falling off in demand in the one case is made up by the greater business in other directions. Not only so, but the mills state that the orders are coming in on a very satisfactory scale.

The demand is broadening in almost every direction. Concurrent with this the the cost of production is rising and manufacturers in most lines have found it imperative to advancece their quotations. Morever it will not be surprising if still higher prices are asked—and if certain classes of paper, which have not yet been affected, be put on a higher basis of values. The view generally held is that it will be a mistake to attempt to boom prices, and that any effort in this direction will result in an appreciable slackning in demand. At the same time, the consumer must bear the burden of the rising cost of production.

There is no few feature in the newsprint section. The publishers expected the advance, and are not in any objecting. Now that the basis has been settled, contracts for 1923 are coming in at a good rate. Present indications point a continuance of the good demand for paper; the chances are that in 1923 it will exceed that of the present year. It is only natural to assume that Canada will have a good share of this business. Our facilities for manufacturing will be appreciably increased next year, and it is more than likely there will be no difficulty in desposing of the additional tonnage. It is stated that the financing of another mill in the Province of Quebec has been completed. This was one of the schemes held up by the war. The proposed plant will have excellent water power developments and extensive limits. American capital is interested in the project.

In writting, book, toilet and tissues, the demand is good, while wrappings are being well bought. The call for boards continues very strong, and it is probable that another advance will be made in prices. The raw materials for this commodity have had a very substantial increase. Rags, waste papers and roofing felts are still buoyant, it being difficult to secure sufficient supplies for waste stock.

The pulp market is very firm. The inquiries for groundwood are as numerous as ever, and prices now permit of profitable production. The demand is so brisk that a further advance is likely. Bleached sulphite is still in very good demand, this department being a seller's market. The chances are that values will be maintained on the present schedule for some time to come. Kraft is moving freely at very firm prices.

The question of labor for woods operations is likely to have a very important bearing on the cost of cutting pulpwood, in the Province of Quebec. There is a real shortage of help, and although there will probably be an alteration of the situation a little later, for the present the comparative small supply has resulted in a very substantial advance in wages. The companies, too, have been bidding against each for the services of the men. Wages went up from $3.5 to $45. per month and according to reports reaching Montreal, the scale has now been advanced to $60. While this may not be general, it shows the tendency of the labor market. The Pulp and Paper and lumber companies are looking for a more liberal force of men when road work is impossible and when harvesting is over. Such wages as $60. per month are bound to be reflected in the cost of the finished products of pulp and paper.

Toronto Markets News

While the Ontario paper trade from the manufacturers' and distributors' standpoint continues to show steady improvement, the industry, as well as many others is being affected by the car shortage in Canada and the United States. A Toronto customs house broker, who handles a lot of newsprint, states that not even during the war was the freight car situation as bad as it it at present. Canadian Railways having lost the use of some 48,000 cars, due to "swiping" by American railroads during the strike, orders have been issued at North Bay that paper shipment for the United States will be released only in available American freight cars. One Canadian road is understood to have issued orders that it will deliver Canadian rolling stock to American lines only on immediate exchange of an equal number of cars in good oroer. It appears that excessive grain shipments, together with coal movements of unusual volume for this time of the year, have exhausted the available railway equipment and the railway companies are casting about and endeavoring to recover as far as possible cars of their own lines non performing service on foreign lines in distant parts of the continent. The situation created by the car shortage is considered one of the most serious obstacles confronting the business world generally at the present time.

From practically all quarters in the paper trade in Ontario come reports of active business with an upward tendency in prices. Jobbers are buying freely from the mills and more paper is being consumed just now than has been the case for months past, while it is felt that the price increases brought about by increased cost of coal and raw material have not yet reached their limit. Coated paper, for instance, is due for a rise, it is said and other lines will advance shortly. Board mills are said to be all running full and their prosperity is reflected in the good business being done by the numerous paper box factories in Toronto, while envelope manufacturers and the stationery trade are busy with fall requisitions.

PULPWOOD.—Reports from the Ontario dealers in pulpwood indicate a slight falling off in demand, although business has been good of late.

Shipments are going forward to a number of mills, most of whom are storing the wood. Owing to the revival of book and writing paper lines there is some demand for poplar. A large number of settlers are offering pulpwood for sale but as yet there is no particular activity in the market. While the pulp and paper industries have picked up a great deal, it is a considerable time before the cycle of rising prices reaches the raw material and pulpwood is usually the last commodity to feel the upward trend. Prices remain unchanged. Peeled spruce and balsam is $11. to $14. and for poplar $6 to selling at about $10 and poplar at $5 to $6 f.o.b. cars. South of North Bay the range of prices for peeled sprucce and balsam is $II, to $14. and for poplar $6 to $8. An early advance in price is looked for but no one is predicting just when it will come.

PULP.—An active market, with generally firm conditions, exists in all lines of pulp and mills report a steady demand. Prevailing prices are: ground wood, $30 to $40: bleached sulphite $90 to $100: easy bleaching $60 to $70.

ENVELOPE PAPER.—A decrease of from half a cent to a cent apound on envelope papers went into effect this week due to the strong British competition that has been developing of late. The cheapest paper now is quoted at 8 cents per pound, with from 12 to 12½ cents for the top grades.

FLOUR SACKS.—Manufacturers of paper flour sacks in the Niagara district report a fair domestic demand. Prices range from $8.50 per M for plain, small size, up to $55.00 per M for large sized printed bags.

RAG AND PAPER STOCKS.—An active demand and firm prices characterize the market and dealers report satisfactory business. In paper stock No. 1 hard white shavings are quoted at $4.00: No 1 white shavings, $3.90: heavy books and magazines, $2.50; ledgers and writings, $2.75: No. 1 kraft, $2.50: newspapers, $1.40: No. 1 mixed papers, $1.20: Miscellaneous, $1.15: No. 2 miss. $1.15. New cotton cuttings: No 1 white shirt, 11¼ to 11½: fancy shirt cuttings, 6: cotton flannels bleached, 8½ to 9: white lawns, 7¾: blue overall cuttings, 6. Ropes and bagging:—No 1 scrap bagging, $20.00: No 1 manila rope, 6, to 6¼; mixed strings, $20.00.

NEW YORK MARKETS

New York, October 21.—(Special Correspondence)—Notwitstanding that paper manufacturers have been gathered in Chicago this week to attend the annual fall convention of the paper industry, and thus have been absent from mills, matters in the market have continued to show steady and pronounced improvement. There is no let up in the demand for paper, nor is there any signs of a let down in prices of paper. Instead consumers and jobbers continue to buy in a volume that has been surpassed in the past only during the boom period in 1920. The oustanding characteristic of the prevailing movement of paper from mills to consuming centres is that it is very healthy. Printers, merchants, publishers and other consumers are buying paper because they are in need of it, owing to marked improvement in their own lines of trade. In view of this, it might be said therefore that the present situation in paper is the most favorable that has ever existed for manufacturers.

The danger now in sight is that a period of inflation may develop. The manner in which prices of raw materials going into paper are jumping is something which is giving papermakers serious concern. Obviously, manufacturers are obliged to advance the prices of paper and board in like proportion, and unless a check on this situation is effected, there is every likelihood of prices reaching an inflated level. Never before has papermaking material sold at such high prices excepting during the war era. This includes wood pulp, waste paper, rags, and practically all other material going into the manufacture of paper. Further advances have been scored this week in some of these commodities, and the end does not appear yet in sight.

Newsprint is in a strong market position. Demand is steadily increasing and manufacturers are finding a

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ready sale for practically all the paper they are producing notwithstanding that mills are being run at capacity or very close to full output. The newspaper publishers' association is warning its members that they are permitting consumption to go to dangerous heights and of the market situation that may develop if they do not put the brakes on the use of newsprint. Despite these warnings, publishers keep on fighting for circulation, and are printing more copies every day and larger issues. For example, one of the big New York dailies has announced that beginning tomorrow it will publish an eight-page colored comic section, thus doubling any section of this kind any Sunday paper in this city has ever before attempted.

Increasing firmness marks prices of book papers, fine papers, wrappings and tissues, and specialties. Consumption of book paper is mounting at a steady rate, and mills producing this kind of paper are by far busier today than they have been in many months. Moreover, they are getting better prices for their product, as they most assuredly should considering the sharp rise in raw stock. As yet prices of book paper are proportionately lower than any other kind of paper, yet it is likely this situation will right itself as demand for book paper gradually gets back to normal volume.

Fine papers are firm and are moving in good amounts. Buyers are more interested in the medium and cheaper grades but nevertheless are absorbing supplies regularly, and mills are busy. This is the season for wrapping and tissue and these papers are enjoying a large demand.

Box boards are firm though demand has sagged slightly during the past few days. Consumers evidently have bought in such heavy volume recently they can afford to hold off for a time. Quotations continue at around $60 a ton f.o.b. New York on plain chip, and $62.50 for news board.

GROUND WOOD—Probably the strongest item in the papermaking material trade at the moment is ground wood. Demand for this commodity is active, to say the least, and available supplies are far from large. Producers are bullish to an extreme and are quoting and receiving higher prices every day. When one stops to consider the heavy consumption of mechanical pulp in recent months by newsprint and board mills, and the continued big demand for this article, it is not surprising that prices are as firm as they happen to be. Domestic grinders are said to be practically sold out for the balance of the year in a majority of cases, and late reports are that only limited supplies of ground wood are to be had in Canada. Around $35 a ton at producing mills is regarded as the market basis of prime spruce ground wood for prompt shipment, and as high as $37.50 a ton has been secured in some instances, it is stated by representative dealers. Canadian ground wood is reported bringing the same prices, though in cases where the buyer is situated far away from the grinding plants, slightly lower prices are quoted. In order words, ground wood bought on today's market costs consumers in the neighborhood of $45 per ton delivered at their points, with f.o.b. shipping mill prices depending on the distance of the haul.

CHEMICAL PULP—A market which shows steadily increasing firmness prevails for chemical wood pulp. Demand is active, and the reports emanating from some quarters imply that boom conditions exist. Prices are rising slowly but consistently. Kraft pulp, which has exhibited a strong price tone for some time, has touched new high levels. About the lowest importers quote on Scandinavian kraft on the spot here is 2.90 cents a pound ex dock, it is stated, while most of them ask 3 cents. Domestic kraft is bringing between 3 and 3.25 cents at pulp mills. News grade sulphite stands at from 2.60 cents per pound at producing plants upward, with sellers said to be turning down offers at less than this figure. Bleached sulphite is firm at 5 to 5.25 cents a pound for No. 1 domestic, while importers want at least 4.50 cents on foreign No. 1 bleached, with up to 4.75 cents demanded for choice qualities. Unbleached sulphite is quoted in the vicinity of 3 cents and No. 1 grade is freely bringing this price.

There is a bullish feeling pervading the pulp trade. If demand keeps up at the rate of the past several months during the next several months it is expected prices will rise to much higher levels. For one thing, it should be remembered that importations of Scandinavian pulp this year have exceeded all previous records, despite which demand has been and is keen and prices have appreciably improved their position. It is therefore argued that if pulp consumption continues in its present volume until after the Baltic is closed and Swedish supplies are cut off, there is no telling where prices may advance to.

RAGS—A rather easy tone continues to prevail in the roofing stock branch of the papermaking rag market; otherwise rags are holding steady in price and are moving in fairly large quantities. Felt manufacturers apparently have their requirements covered for a time, which assumption is substantiated by the fact that arrivals of roofing rags from Europe recently have been very heavy, and are doing little wholesale buying at present. The consequence is that prices on this class of rags display a softing tendency, as in usually the case when this grade of stock fails to move. No. 1 roofing is quoted at around 1.30 cents per pound f.o.b. New York, and No. 2 packing at about 1.20 cents, though dealers report securing slightly higher figures in some cases, mostly on back orders. New cuttings are firm. No one appears to be presenting white shirt cuttings on the market and No. 1 cuttings are quoted by New York dealers at about 11.50 cents a pound f.o.b. this city. New unbleached muslins are firm, as are white lawns, blue overall cuttings, light silesias and shoe cuttings. Washables are slightly higher, most dealers wanting at least 4.25 cents a pound for No. 1 packing of these rags. Old whites are steady and in fair call, and thirds and blues are holding their own in price at approximate stationary levels.

PAPER STOCK—Reports are at some variance in regard to the old paper market proof is not wanting that consumers are enabled to buy most grades at slightly lower prices than lately obtained. Folded news, for instance, has been reported sold at as low as 1.25 cents a pound f.o.b. New York, though 1.30 cents is regarded as a fairer market level. No. 1 mixed papers are quoted in New York at 1.20 cents a pound, heavy No. 1 books and magazines at 2.65 cents, No. 1 old kraft at 2.25 cents, white news cuttings at 2.15 cents, and ledger stock at 2.85 cents. Shavings hold at about 3.85 to 3.90 cents for No. 1 soft white, and 4.40 cents for No. 1 hard white. One reason for the easier price condition is said to be the embargoes placed by railroads out of New York on paper stock and other commodities, which of course has diminished the movement of supplies to consuming centres.

OLD ROPE AND BAGGING—There is a fairly good call for No. 1 scrap bagging with dealers reporting sales to paper mills at around 1.25 cents a pound at shipping points. Scrap gunny also is in moderate call, whereas roofing bagging is largely neglected. Old rope is firm and moving in a steady way at about 6 cents per pound New York for No. 1 domestic manila rope.

With the Woodsmen

BUD WORM BUSY IN MINNESOTA

From The University of Minnesota, Department of Agriculture, University Farm, St. Paul

Minnesota's balsam, second only to spruce as a source of woodpulp for paper making, is threatened with destruction. The situation is critical according to Dr. S. A. Graham of the division of entomology, Department of Agriculture, University of Minnesota.

The spruce budworm, which is better called the balsam budworm, is making inroads on the balsam of Minnesota just as it has already made inroads on the balsam areas in eastern Canada and the United States, and recent observations by Dr. Graham show that from 50 to 100% of balsam has been killed or will be killed by the budworm in that part of Minnesota lying east of a line drawn northward from Two Harbors on the north shore of Lake Superior.

The significance of such loses to the paper making industry may easily mean an increased cost of paper. Dr. Graham in the summer of 1919 spent six weeks in the woods of Quebec and New Brunswick. A writer in the Journal of Economic Entomology for August says that the Province of Quebec along in the last ten years has suffered a loss by the balsam budworm of 150,000,000 cords of standing pulpwood representing a market value in pulpwood of $3,000,000,000, or a loss in manufactured paper of 7,000,000,000. It is estimated that this amounts to a loss of wood sufficient to make a 45 years' supply of newsprint for North America.

The budworm is a native insect which normally causes little damage. The increase in the amount of balsam has made available more food for the budworm, however. Consequently, the budworm population has grown enormously. The moth lays its eggs late in July and early in August on the needles of the balsam and spruce. The eggs hatch in the fall and the larvae or worms spin shelters immediately. The following spring just as the balsam buds are bursting, the larvae emerge and feed upon the new needles. By the end of June the worms have passed into the pupa stage and a new crop of moths appears in July, and the cycle begins all over again.

The cycles keep repeating until the balsam and spruce are about gone. Then come along other insects like bark beetles to complete the devastation.

The killing of the balsam and spruce in large areas, moreover, greatly increases the fire hazard, and fires help to swell the loss.

Dr. Graham believes that the right handling of forest growths eventually will prevent the periodic outbreaks of the balsam budworm. There is no quick remedy. After a time, the supply of balsams will be greatly reduced and the balsam budworm armies will be without sufficient food. When that time comes, the remaining young balsams scattered among other forest species will have a chance to grow and in time the situation will correct itself, only to open the way, however, to future inroads by the balsam's worst insect enemy, when the food supply has sufficiently increased again. The remedy, as Dr. Graham suggests, being in the development of proper forest methods, the present situation should be studied closely with a view to saving future supplies of woodpulp material.

Arguments win few friends.

THE ONTARIO HOLOCAUST

By FRANK J. D. BARNJUM

From far-separated sections of our country there has come during the week in which I write news of momentous significance and dread omen, which should arrest the attention of every thoughtful citizen of the Dominion. The terrible forest fires in Northern Ontario, British Columbia and Quebec have driven home the lesson which I have been striving to teach, with the written and the printed word, with more force than any words of mine could convey. It is a compelling warning of impending disaster. Just as it is true, no nation lives unto itself, so no community, no man lives unto itself or himself. Every citizen has a vital stake in the protection of our wood resources, and if our splendid Canadian heritage is to be preserved, we must be ready to recognize—nay to fulfill the obligation imposed upon every one of us individually.

Why is this so? In cutting the small immature trees as we are doing today, we are not only robbing the next generation, our own children; we are fast producing conditions that will make our country uninhabitable, through extremes of climatic conditions, and in long periods of drought, causing such appalling holocausts as in Northern Ontario, with occasional surplus of rains producing damaging freshets, washouts and wind storms of increasing velocity. All of these conditions are the results of denuding our country of forest growth.

We are not only cutting down trees that do not belong to us for our own industries; we are bartering them away by the millions, for a mere pittance, robbing our children for our own present needs and squandering them lavishly on another country. Over one million, six hundred and fifteen thousand cords of pulpwood alone were shipped out of Canada last year, or more than twenty-five million trees; half of the entire annual requirements necessary for Canadian pulp and paper mills.

In addition to this we are sending settlers back to clear up forested country which is more suitable for raising trees than anything else, when past experience has proved, time and time again, that it is only a question of the first really dry hot season when these settlers will be burnt out, with a very good chance of their being burnt up as well. This is particularly wicked when we are already suffering from a lack of foresterd area and have a surplus of vacant, cleared and prairie land. In short, we are not merely penalizing ourselves; we are just as surely imperilling the future of our country.

As the Boston Herald recently tersely said: "What adds to the pity is that most of the timber destroyed by our woodland fires is so young as to belong to generations not old enough to protect it."

CHILDREN COMPETE FOR FORESTRY ESSAY

Scores of school children in every school district of the Dominion are competing these days in the national school essay competion on Forestry and Tree Planting inaugaret recently by the Canadian Forestry Association.

Questions as to the resources of Canada, the damage done by forest fires, what trees to choose for planting and how to plant them are being asked by a multitude of young people and the resultant information is being applied to the essay competion. Three substantial cash prizes are being given in each province and the effect of the national effort to stimulate juvenile interest in the forest resources of the country and the multiple benefits of tree planting has secured the hearty endorsation. of all the departments of education which are giving every cooperation.

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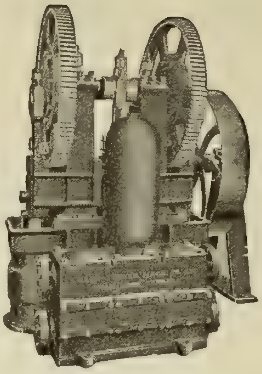

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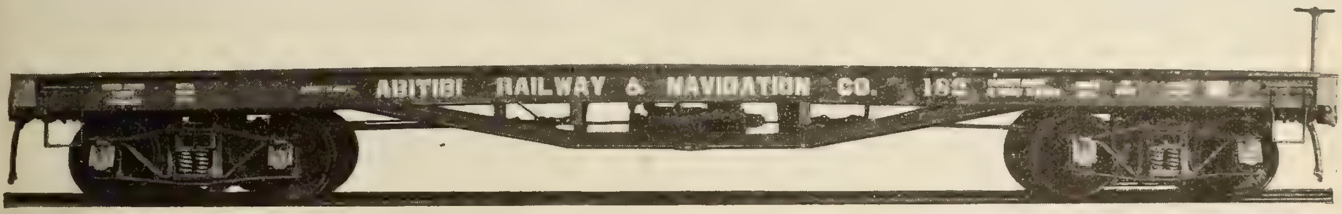

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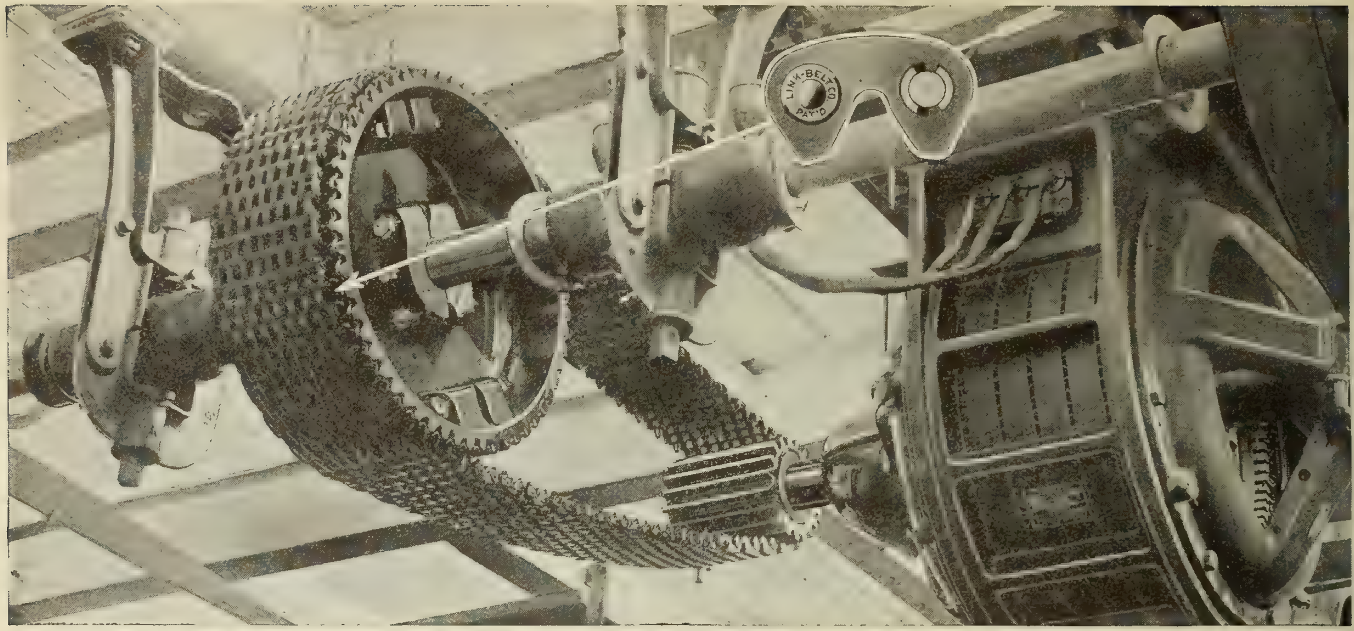

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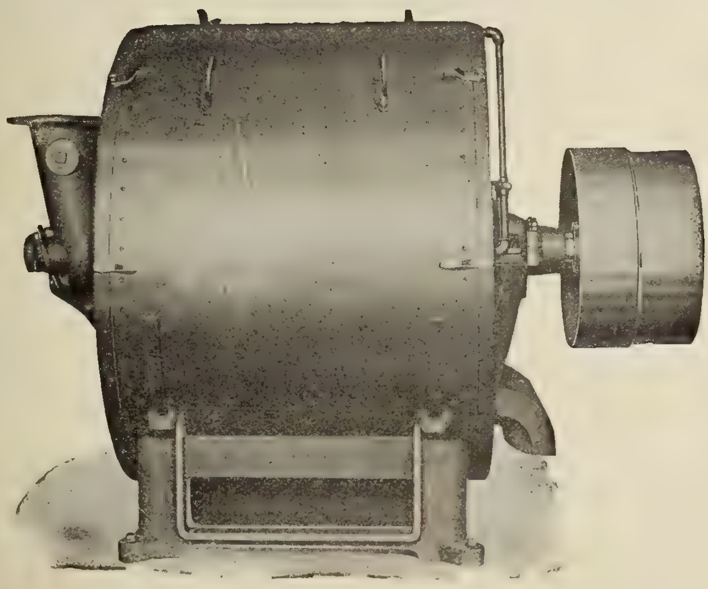

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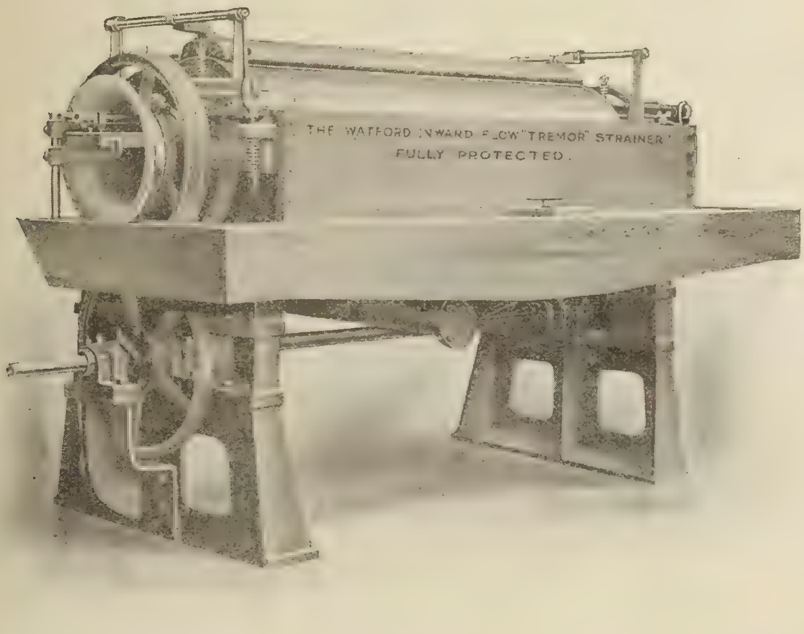

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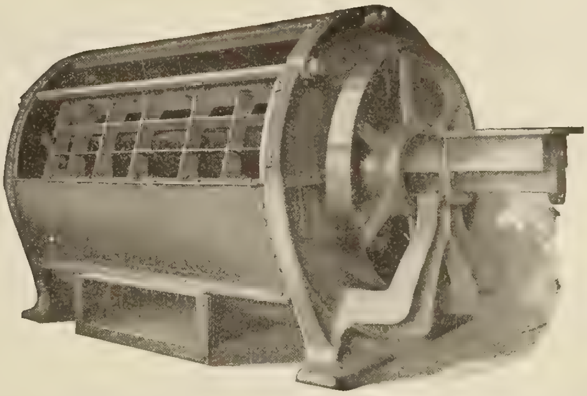

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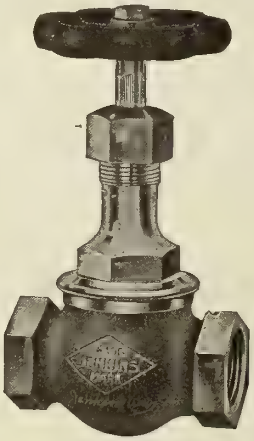

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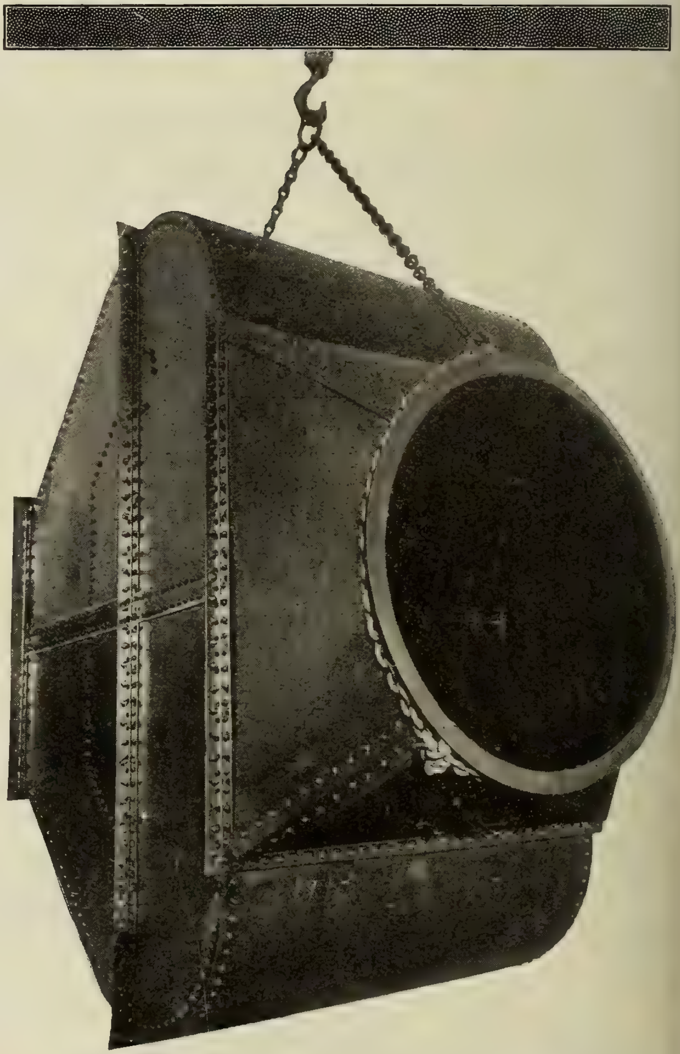

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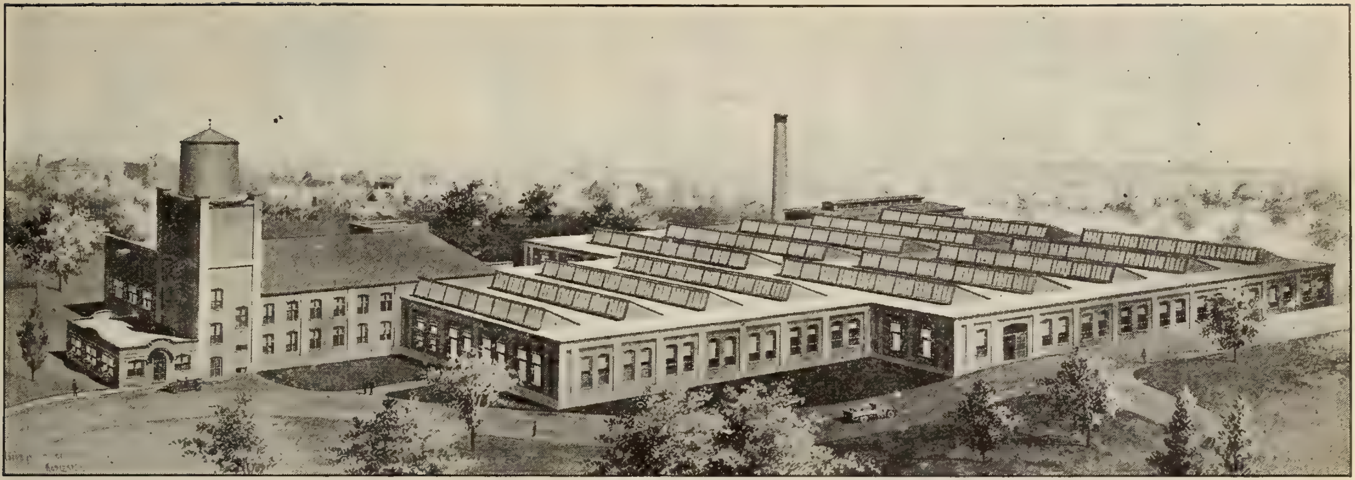

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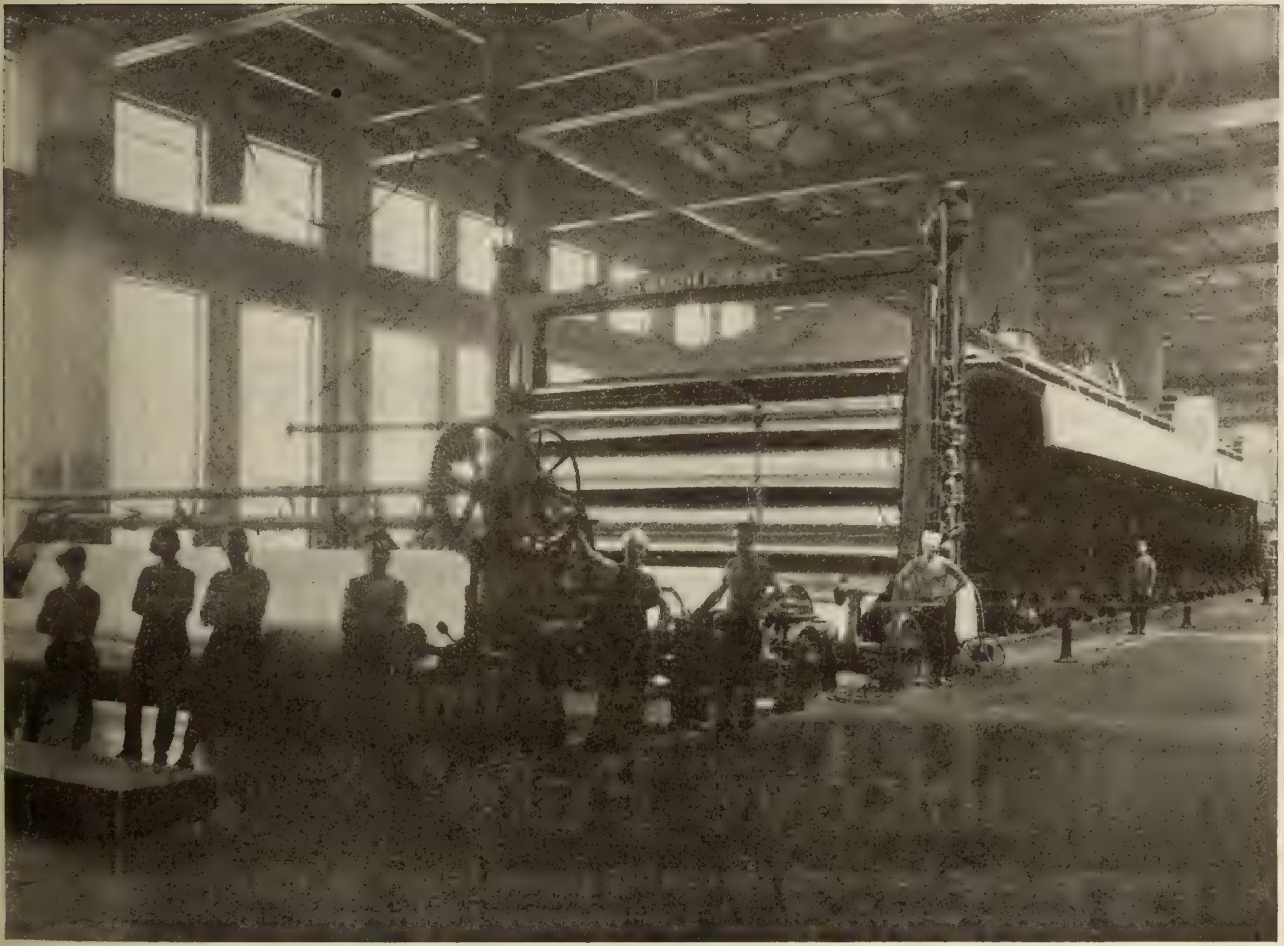

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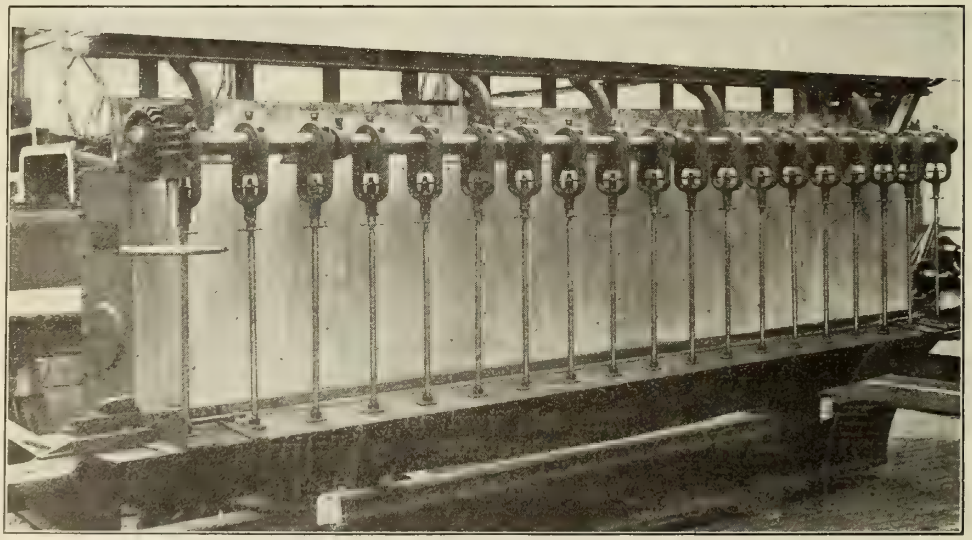

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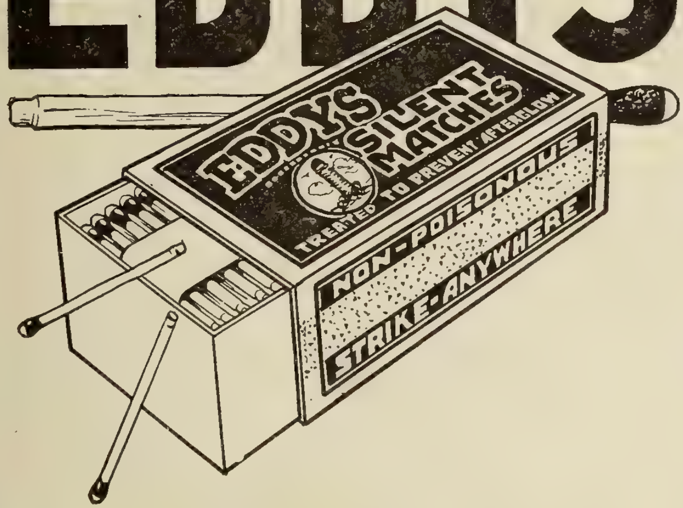

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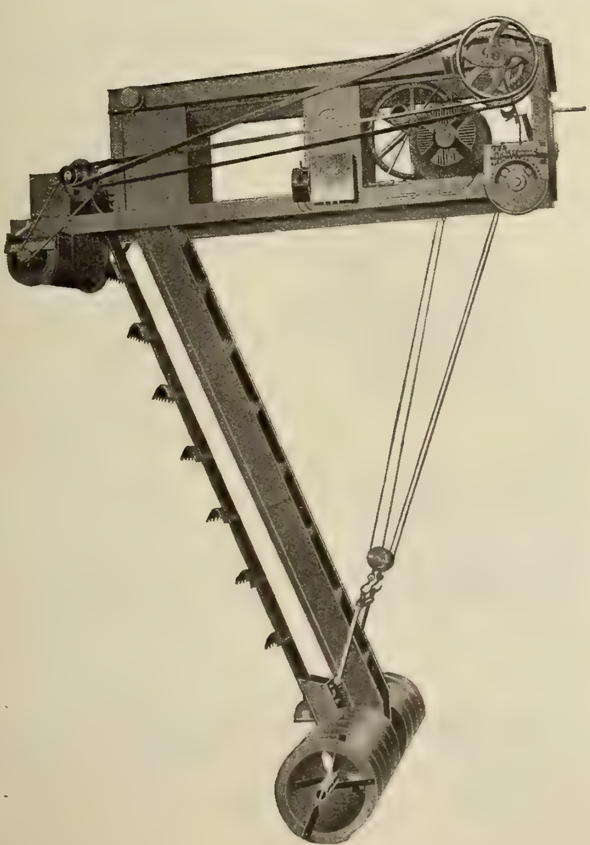

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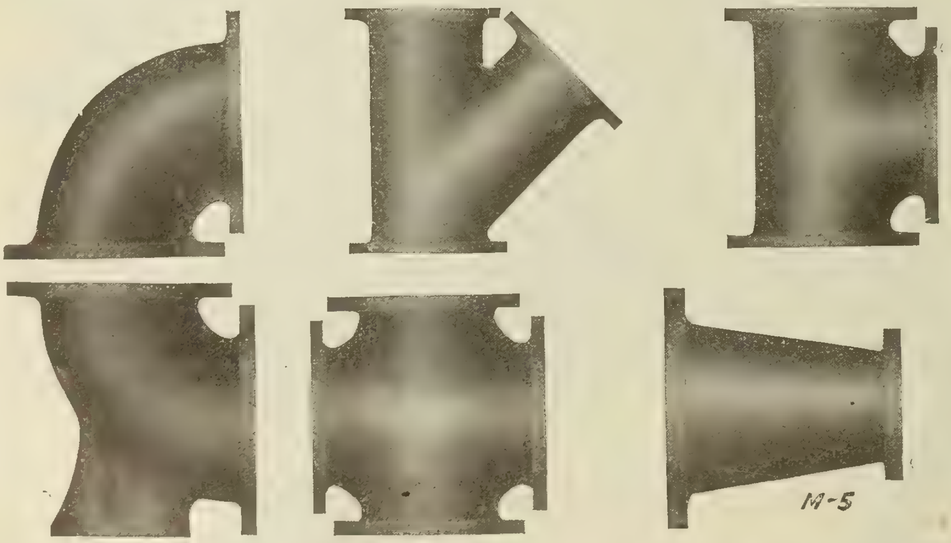

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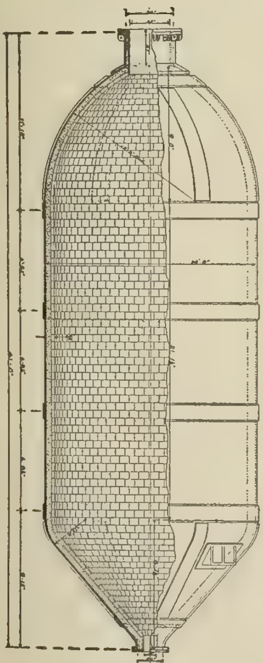

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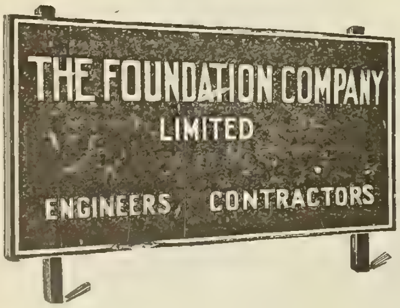

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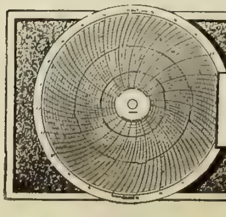
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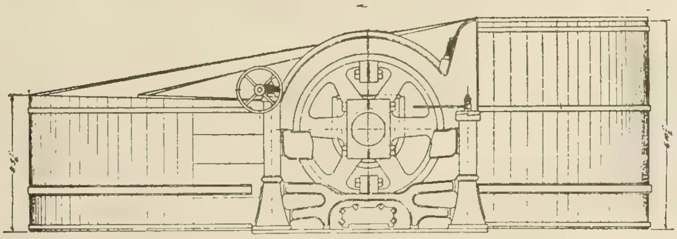

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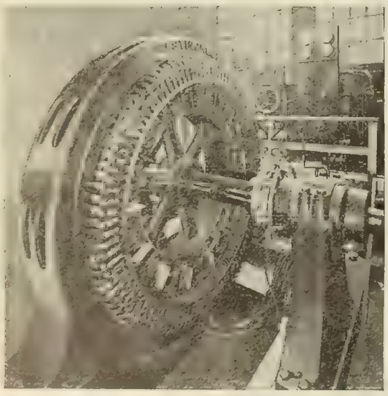

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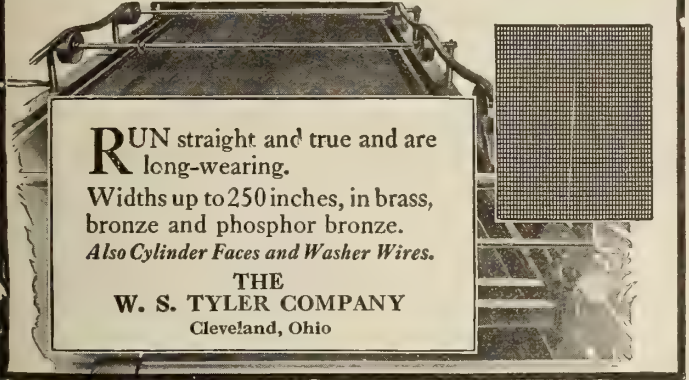

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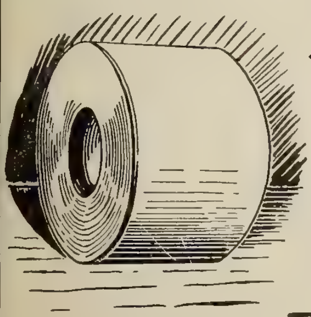

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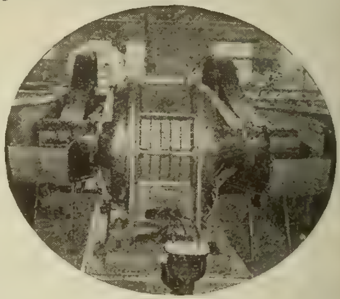

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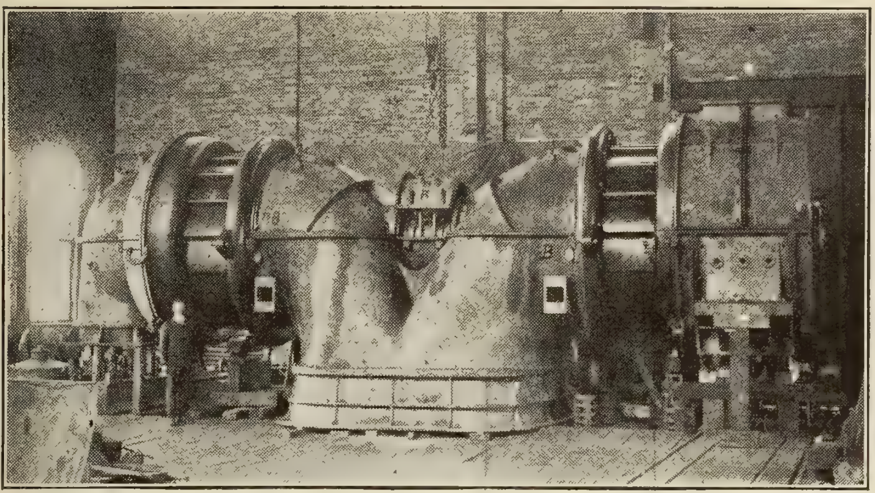

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XX. GARDENVALE, Que., November 2, 1922 No. 44

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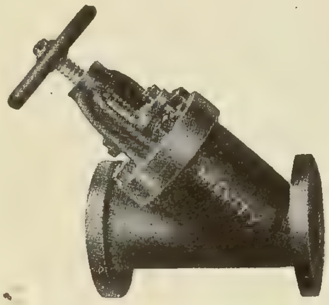

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-:- EDITORIAL -:-

CONCERNING PULP AND PAPER SCHOOLS

An important matter before the Government of Quebec Province is the establishment of a School of Paper Making. The disposition of the Provincial authorities to take action along this line was intimated by Sir Lomer Gouin in an address to the Pulp and Paper Association several years ago, about the same time that the industry began an effort which has produced a set of text books suitable for such instruction. The government of Premier Taschereau is known to favor any movement by which the people of the province will benefit and the premier especially recognize the need for further educational opportunities.

The questions arise as to whether the present educational facilities are adequately utilized and as to the direction and extent of additional facilities required.

We feel that the first question must be answered in the negative. Not only are there thousands of persons in the pulp and paper industry who can neither read nor write, but many more who have a smattering of an education are very inadequately equipped in the very fundamentals. In our own printing plant boys apply for work on leaving school at the age of fourteen who cannot add simple fractions and hardly know a decimal from a duck. If a school of paper making were established, when would it begin, and how far would it go? Surely there is no need to duplicate schools to teach arithmetic, spelling, composition and geography. The first effort should obviously be to build a groundwork of youth fully equipped with a good working knowledge of these fundamentals.

The next point, to our mind, is the establishment of pre-apprenticeship classes in industrial communities—not an elaborate central school just yet—and give instruction in elementary algebra, mensuration, geometry, citizenship, commercial geography, physics, mechanics, electricity, and chemistry. The subject matter should be arranged with a bias toward the industry of the locality and there should be reading courses and lectures—yes movies too—on the principles of the principal local industries. Such a program would occupy the average student till he is sixteen, and more boys would be inclined to continue to the completion of this preparatory course, in spite of the law's invitation to quit when school age is reached.

Instruction of this kind would be very inexpensive, especially in comparative with the benefit to the student and the community.

The next step is more difficult to decide upon and plan for a factor in the situation, and one which is not often sufficiently credited to the man who persists in educating himself, is the degree of sacrifice one is willing to make. True, it is made for his own ultimate good, but it often is, for the time, a very real sacrifice, usually of time, money, and companionship. Eventually, however, the student comes to look on the matter as a very satisfactory investment, yielding, in most cases, a very handsome return. We have heard it said in college circles that an education is one of the few things a person will pay for and not take. How much, then, will be taken if it is free?

It seems to be true that, after a boy attains the age when the law permits him to leave school, if he wants further education he is usually willing to work for it. Giving it to him does not materially increase his desire for it. Some boys who are required by family finances to go to work would doubtless profit by further free schooling, but most of those who want it get it. Some scheme of vocational education seems to be the solution of their problem.

There are three general schemes. The first is an established central school to which students come from various places. This plan takes students away from home and away from their work. It puts on them the burden of transportation and living expenses, which gives one community a distinct advantage over many others. This scheme requires the building and equipment of a suitable school.

The second scheme is the formation of a night school or past time school in each centre. This has the advantage of keeping the boy at home and permitting him to work. Such a course will take a longer time than concentrated work in an all-day school. But the class can be conducted in quarters already available, and the instruction can be tied in with every day work.

The third method is by correspondence instruction. This too, has some disadvantages, such as the lack of direct contact with the instructor, but we enjoy real friendships with several men we have never seen. The student can feel the same toward his instructor by mail. There are, in this method, several distinct advantages over the others, such as the lack of interruption of work by reason of the shift, or tour, system of work in this industry, and the fact that a student may progress as fast as he is able, without loss of time going to and from class, where further time is lost in recitation, explanation to others of points the student already comprehends, etc. In conjunction with the enrolment of students in correspondence courses, the establishment of study groups where quarters and a tutor could be available without expense to the student would probably be a workable and acceptable plan. A properly prepared course, however, will require very little additional explanation, which accounts for the apparently remarkable progress that most students make. Such a course has been prepared at the expense of some $50,000 to the industry, but it, as well as the other schemes mentioned, fails of maximum advantage to the industry because of the failure of the elementary school to give the majority of boys and girls a proper knowledge of the fundamentals of elementary mathematics and science.

In addition the expense of preparing the text books and publishing them in English, a special translation of the elementary material has been made into French. This is done in order to provide a satisfactory basis for study. The idea of establishing a vocational school of paper making is, or should be, primarily the education of the rank and file in the mill. In Quebec province there are probably at least eight French speaking employees to one who has had an English education. But experience shows that of those who are desirous or capable of a vocational education there will be ten English to one French. And of these ten, more than half will have got their elementary education in some other province or country.

A vocational school can not stand without generous support from the industry and the extent of that support does not seem warranted by the probable returns.

The other phase of the problem, which is also receiving the attention of the government, is the matter of higher education for the technical staff. It has been already suggested in these pages that the proper place for such instruction is in connection with a university. We have referred particularly to McGill University because of the provision by Mrs. E. R. Eddy of a generous beginning for the endowment of a chair of which might perhaps be called the "Technology of Cellulose" and because of the proximity of the Forest Products Laboratory with excellent equipment for the pursuit of research work in the peculiar problems of the industry as well as in certain fundamental aspects of the investigation of the character of cellulose and its associations and utilization. This subject is usually considered a matter of chemical engineering, but really there should be a provision for the aspirant for a career in the pulp and paper industry to study the special applications of mechanical, civil, structural, electrical and forest engineering to the manufacture of pulp and paper.

The establishment of educational facilities for the training of technologists and experts should be comparatively easy; it is largely a matter of coordinating on a cooperative basis the facilities at present existing. But the real problem is to develope a generation of papermakers who know, really *know*, arithmetic.

MACHINES INCREASE WAGES

In the United States, as compared with Great Britain, their nearest competitor, says *Machinery*, production per man is 2.6 times as great, the output per man is twice as great, and wages correspondingly higher. The cause is found in the fact that we use three times the mechanical horsepower per worker that England does.

A short temper and a long head rarely go together.

"COMPULSORY LABOR"

Let us consider calmly and intelligently this phrase "Compulsory labor" that comes from certain quarters when it is even hinted that the faithful performance of a man's work may be so essential to the well being of his fellows that he may not act in such a way as to deprive his fellows, even temporarily, of that service.

There is a vast difference between *compelling* a man to work, and requiring of him that he shall carry through faithfully and efficiently what he has voluntarily undertaken to do. The public has the full right to say that certain labors, essential to the public welfare, shall not cease; but it has not the right—nor has it been anywhere suggested—to *compel* any man to *undertake* that work.

No man can say rightly that he is compelled by some force outside of himself to do what he freely and voluntarily undertook to do. The sole compulsion in such a case is that of his own sense of manliness in carrying out to the letter the terms of the agreement into which he has entered. He is perfectly free to undertake the work or to leave it to some one else; but having undertaken it his freedom of action is restricted in exact proportion to the obligation that he has voluntarily assumed.

That is all there is to give birth to the mouth-filling but senseless phrase "compulsory labor." No man is compelled to labor in this country. He may lie idle and starve if he wishes to do so. But he may not organize his idleness and his starvation to the jeorpardizing of the welfare of the organized community that offers fully and freely to everyone of its personal units "life, liberty and the pursuit of happiness."

"Compulsory labor" "Wage slavery" Wholly meaningless phrases in this republic [or the British Empire.] Every man is free to work and has the right to work. He also is free to quit work and has the right to do so. But having exercised his right to work if his right to quit runs counter to the superior right of the public to have the service he is giving unimpaired, he may not quit that work in such a way and under such conditions as will cause suffering, discomfort, inconvenience or loss to the public.

That is all there is to "compulsory labor."—*The Valve World.*

HOW MUCH DO YOU DO?

That is the big and ever-present question to-day. It is not a matter how hard you work, but how well you work — how much you accomplish and how well you do it. In the seeking for lower costs, that we may have reduced prices, it is not slave-driving that is aimed at, but greater accomplishment, coupled with less physical effort wherever practical. It means more thinking rather than more hustling, means that we must think more about what we are doing, so that we may do more and do it better, with the same amount or even less energy. Here and there may be cases of laziness that make for low production and high cost, and these should get the attention they deserve.

In the main, the great seeking today is for that brain action which will enable all of us to accomplish more each day. One of the logical first steps is to survey our present accomplishments and find out how much we are doing; then comes the devising of ways and means to do more and do it better. Every man who can give a good account of himself here has an opportunity for advancement.

Paper Trade Association Convention

Account of the fifth annual meeting at Toronto

Paper merchants representing the selling and distributing end of the paper trade from Halifax to Vancouver met in the Fifth Annual Convention of the Canadian Paper trade Association at the King Edward Hotel, Toronto, on Oc. 25th and 26th, and in a series of discussions on matters pertaining to the paper trade the best and most progressive thought of the leaders in paper sales and handling found constructive expression. With the slogan "Business is getting better-Lets all help it along" as the key-note, the members of the Association took a broad survey of the situation and discussed ways and means of increasing the effectiveness of the organization and of furthering the spirit of co-operation that has already built up a strong organization within the paper industry.

The convention got under way under the chairmanship of President C. J. Kay, of Vancouver, following an address of welcome by John F. Ellis, of the Barber & Ellis Company, Toronto, who is generally looked upon as the dean of the paper trade in Ontario. Mr. Ellis recalled some early reminiscences of the early days of the paper trade in Toronto, and in dealing with the present condition of the paper trade he declared that there had been no branch of commerce in Canada that had done so much towards restoring the Canadian dollar to its normal value in relation to financial interchange with the United States as that of the pulp and paper industry.

In his annual address President C. J. Kay, of Vancouver, stressed the fact that during the trying period of financial and industrial depression through which the paper trade generally had passed, there had not been a single failure among the paper distributors in Canada. He referred to the spirit of goodwill and co-operation that had existed throughout the year between the paper merchants and the manufacturers of paper to the mutual benefit of both branches of the trade, and predicted that while the worst of the depression in the paper business was passed there were yet trying times ahead. President Kay spoke with deep appreciation of the excellent work done through educational effort in the pulp and paper mills of the country and suggested that the association might with profit take up the idea of a similar educational campaign in the use and handling of paper by these engaged in paper distribution. He commented the classification of grades and the introduction of the Marking Goods Act, which, he thought, would do a great deal towards promoting the interests of the paper trade generally.

Reports from the chairman of the various sections concerning conditions in various districts of Canada were all of a cheering nature and showed a spirit of co-operation in the grade and of mutuel help to all engaged in the handling of paper,. It developed, however, the use of the long price list and the was some slight provinces the paper merchants were being called upon criticism of the eastern members in adopting it before canvassing the situation with the western members of the associaiton. It was also brought out that in the eastern provinces the paper merchants were being called upon to meet fairly strong European competition. E. A. Schofield reported for the Maritime Section: T. Havill for the Quebec Section: R. I. Finlay for the Ontario Section: A. Clarke Hunt for the Prairie Section and C. J. Kay for the British Columbia Section.

Matters that came in for considerable discussion were the report of the Mills Relations Committee and the subject of the new Marking Goods Act. C. W. Graham of Hamilton, Ont. presented a paper "Unfairness of sales tax as Applied to Printing and Paper Trades".

Officers elected

The following officers for the ensuing year were elected: Hon. President, John F. Ellis, of the Barber & Ellis Company, Toronto: President, George Wilson, of Clark Brothers, Winnipeg: 1st Vice-President, J. B. Larkin, Federal Paper Co., Limited, Montreal: 2nd Vice-President, P. I. Findlay, United Paper Mills, Ltd., Toronto: Treasurer, E. S. Munro, of Wilson, Munro Co., Limited: General Secretary, N. L. Martin.

The Hills Relations Committee met a committee from the manufacturers on Wednesday and discussed a number of matters of mutual interest. Among these was the question of the mills packing 510 sheets of paper to the ream instead of 500 in order to avoid the necessity of printers buying small extra quantities to take care of spoilage, chiefly in the line of term "writing" ended and the term "bond" commenced in the description of these lines of papers.

MR. C. J. KAY,
President Canadian Paper Trade Association 1921-22

A resolution was put through on Thursday to have the annual meeting take place each year in the first clear week in October and the decision was reached to hold next year's meeting in Montreal.

During the gathering an excellent address was given by Charles V. Syrett of the Victoria Paper & Twine Company, who is chairman of the coarse paper division, in which he spoke encouragingly as to the outlook and present status of the wrapping paper trade.

The trade customs came in for some duscussion and it was decided to amend them with respect to what constitutes a ton of paper by extending to the purchaser the right to sort grades in making up a ton order, in addition to colors, weights and sizes.

by C. J. Kay, Columbia Paper Co., Vancouver, B.C.

President's Address

Gentlemen:

We are assembled today for the Fifth Annual Convention of our Association. At the outset let me convey to you my appreciation and thanks for the honor you conferred in appointing me your President for the year just closing. This is the first opportunity I have had to thank you. Coupled with this, I must express regret that owing to the fact that Vancouver is some three thousand miles away from our activities in the East, I have been unable to visit you all personally. I sincerely hope the interests of our Association have not suffered through unintentional neglect on my part due to this geographical situation.

Our Association has now been in existence for five years. President Martin in his report for 1920 had this to say: "The real test of our goodwill and real interest in the Association will come when we are further involved in the resumption of more normal conditions. I am hoping that the friendship and the understanding now existing will do much to carry us all through any such period of stress we may be called upon to face."

The peak of the rise in prices was reached in July 1920, and the downward move commenced in September 1920. Now, gentlemen, it should be a source of gratification to all of us that, having been put to the test during the last two years, we have come through successfully. Without doubt, our Association has justified its existence, in that it has carried our members safely through the most momentous and dangerous period in the business life of Canada.

It is worthy of note that during this trying period there has not been a single failure among the distributors of paper in Canada—and represents a startling contrast to the conditions existing in some lines of trade not having the safeguard of co-operation through the medium of an Association such as ours.

I want here to pay tribute to the goodwill and spirit of co-operation shown towards our organization by the paper manufacturers — a happy condition which has without doubt worked out to our mutual benefits.

We however are not yet out of the woods. I do believe there are still trying times ahead. We must not, therefore, slacken in our efforts for co-operation, and this splendid gathering to-day is proof to me that goodwill for, and recognition of the benefits of an Association such as ours is still manifest in its members. You know it is easy to work up a certain amount of enthusiasm at a friendly gathering such as this. Here we have men from the far off Pacific joining hands with friends from the Atlantic seaboard. Representatives from the great Prairie Provinces personally present their goodwill to friends of the Industrial East—a large family gathered from many points of our great Dominion. For what?—just to talk and debate?—to break bread with one another and pass on again? Oh no! I believe this gathering means more than that to every one here presnet—to every member of this Association not present. It means, I am sure, that the interests of every one of us are so linked up that we will carry on the good work with greater enthusiasm, with greater goodwill, with closer co-operation. Let us put a little more of ourselves into the organization, realizing that in measure as we give so shall we receive.

Gentlemen! I do believe our Asociation is growing steadily in influence. We have accomplished a great deal. Let us continue in the sincere belief that no difficulty or obstacle which may crop up in our path is so large or momentous but that it overcome by united effort and brotherly co-operation.

We are engaged in a line of which we should all be justly proud. The Pulp and Paper Industry has grown in to one of supreme importance in Canada. Its exports rank second among Canadian products, rising in twenty years from practically nil to the splendid figures of 200 million dollars. This splendid achievement without doubt has been one of the main factors in bringing our Canadian dollar back to par. We have the resources. We want them devloped — but developed for the benefit of our own people. Now we merchants are the "Sales Force" of the Pulp and Paper Trade. Just as we must rely on the mills to produce the goods for us to sell, so the mills look to us for an outlet for their product. Recently I read this: "The driving force of modern business is selling." Are our selling organizations as efficient as they might be? I have been much impressed with the work undertaken by the Pulp & Paper Association in compiling Practical and Technical Treatises on the Industry for the use of students, and I venture to suggest that something along similar lines might be undertaken for the employees of the Paper merchant. Most of us, I think have risen from the ranks and in the first of our business career taken an active part in the selling end. As the business has grown, executive duties have forced us to rely on employees for this service. Are these employees as well equipped for the work as we were?

In many ways our customers judge our company and ourselves by our representatives. A salesman with confidence in his own knowledge and ability will beget confidence in the customer. In my own humble way, I have been trying to do something practical for the employees of my company and during last winter set a series of questions bearing directly on the uses and handling of paper for them to study and answer. The answer received were most gratifying, showing that most of them were taking a real interest and were anxious to learn.

Now I am mentioning this for a purpose — we paper merchants have during recent years, and doubtless will be during the years to come, faced with the serious problem of keeping our overhead charges at a point where our net profits on sales will show a reasonable return on invested capital. The quickest and easiest way of course to accomplish this is to increase the gross profit. For economic reasons this cannot always be done — in some instances, such as specialty goods, it can, but the percentage of such goods is small. Can sales be increased? To a certain extent I think they can by efficient and intelligent salesmanship. A good grasp of the properties and characteristics of the various classes of paper will suggest uses that would otherwise not be thought of. An intelligent knowledge of the possibilities of direct advertising properly presented, will often influence business. Again — efficient service by employees not connected with the sales end will result in reduced overhead. The cheapest man in our employ will, I believe, do more efficient work if he believes an interest is being taken in him. The possibility of promotion is an incentive to an employee to give better service.

The classification of grades adopted during the year by the Quebec and Ontario members was a step in the right direction and has, I am sure, resulted in benefit. This principle is now in effect at the various divisions.

The new marking act coming into effect shortly should mean increased use of Canadian made papers.

I take this opportunity of expressing on my own behalf appreciation of the services rendered by our

Secretary, Mr. Martin. Handicapped as I have been, I have had to rely on him a good deal, and I am sure our interests have not suffered through lack of effort on his part.

In closing I bespeak for my successor continued goodwill and loyal support, which I am sure will be forthcoming. Two Johns have been succeeded by two Charlies — now let George do it!

REPORT OF THE SECRETARY

By N. L. MARTIN, Toronto

The most important feature in connection with the operations of the Associations during the past twelve months has been the extension of co-operative effort. Until this year the co-operative activities of the Association have been confined to considering the problems of our members from the buying standpoint and by seeking a solution of difficulties in trading by joint discussion with the mills supplying us with our products. And in these efforts, while much remains to be done, the result of five years' work, have, I feel sure, been most gratifying. This year has seen the co-operative spirit extended to the selling end of our business by a discussion of the printers' problems with the local Typothetae organization. The long price list has been in operation for some weeks, an arrangement of our price lists much sought after by a large section of the printing trade. It is as yet too early to say whether this will be found to be of mutual benefit.

MR. N. L. MARTIN,
Secretary Canadian Paper Trade Association

Our discussions during the year with the mills have in general been directed to the establishment of the principle that the wholesale paper merchant is the proper channel through which paper should find its market. Paper sales which reached such high figures during the tremendous activity of the War period, have suffered a big decline in sympathy with all other products. A reduction in demand will inevitably create a corresponding increase in competition for the trade that offers, and a little serious thought will establish the fact that this very proper keenness on the part of our mills for business might have made a very heavy inroad into the wholesalers' selling field, had we not by a fair representation of the facts and by the weight of united opinion, been able to point out the equity of the wholesale merchants' view. During the year a study of statistics as to sales as demonstrated to all of us that to-day there are far more sales in number making up a decreasing volume of totals. The printer is carrying less stock on his shelves than ever and is buying from hand to mouth, thus increasing the number of small sales and adding to the cost of doing business. This very fact makes is essential that the wholesaler should bend every effort to jealously guard his legitimate market for the bigger orders which provide the balance to maintain a profitable and successful business. As paper merchants, we have come through exceedingly trying times in the most gratifying manner. I sometimes wonder if any of our members at any time have felt that the time spent in attending our sectional meetings — of which there have been very many during the year — has been in any degree wasted or that the small expense of maintaining our Association has been money spent without return. As a commercial accountant of some experience and with a somewhat extensive knowledge of the causes which lead to bankruptcy, may I say that it is firm belief that the time and money so spent brings to the individual member a greater direct profit than a similar degree of time and money expended in any other direction. Had the ship of commerce in paper been set adrif through the storm through which business has been travelling in the past few years, without the rudder of co-operation to direct its course, then undoubtedly we would all have experienced a very different condition to that which we have enjoyed. The credit is solely due to the practical application of the Golden Rule to every day business; we are all learning that by doing unto others as we would that they should do unto us, is the best means of helping ourselves. The intimacy brought about among ourselves by Association work has taught us all to apply these principles more and more to our every day business.

In the early part of the year, the Quebec and Ontario section adopted a scale of classification of trade which is a long step in the right direction. This made necessary several visits of small committees from each section to the other.

Your secretary has twice paid a visit to the Quebec section during the year. There have been one or two conferences with a committee from the Canadian Pulp and Paper Associationand I have also had the pleasure of renewing my acquaintance with members of the National Paper Trade Association of the United States by attending the National Convention in New York in April last, wher much useful data was picked up.

The Credit Bureau has been actively continued during the year, an increasing number of reports having beenfurnished to enquiring members.

Altogether the year has seen our members working on the whole in a splendid spirit or harmony and good will. If we have not yet brought the conditions of the paper trade into a state of idealism, we are making progress and removing steadily the obstacles which are in the path and pressing steadily toward that goal.

An interesting and instructive paper on "Unfairness of Sales Tax as applied to printing and paper trades" was read by C. W. Graham of Hamilton, former President of the Asociation. He made several valuable suggestions and moved the following resolution, which was adopted.

> Whereas it is evident that the intention of the Sales Tax Act is not to tax manufactured goods which pass through the hands of wholesalers in the

course of distribution more heavily than when sold direct by a manufacturer, and whereas by the ruling classifying printers (with whom the great bulk of the trade of wholesale paper dealers is done) as manufacturers, this intention is mullified as far as the paper trade is concerned, and the product of paper mills and other manufacturers which is distributed by wholesale paper dealers is discriminated against very seriously, be it resolved.

That the members of the Canadian Paper Trade Association do hereby enter protest against such discrimination and urge the Government to make such change in the Act or the interpretation thereof whereby such discrimination shall be removed.

That the members believe that this and another discriminations can best be rectified by the adoption of an act whereby — (a) sales by licensed manufacturers or wholesalers to other licensed manufacturers or wholesalers for resale, either in the same condition or after further processing, shall be exempt from sales tax. (b) That all others sales (i.e. to retailers or consumers) by licensed manufacturers or wholesalers be subject to the full tax which at present stands at 4½%.

Be it also resolved that in the opinion of the members, many of the various exemptions and regulations at present in force are resulting in an interference with the natural course of trade, tend to open channels whereby taxation can be avoided and are therefore detrimental to the best business interests and that these should be reconsidered and except in some very special cases, should be eliminated.

That the officers and executive of this Association be instructed, preferably with the co-operation of other Associations of the paper and printing trade, to bring this matter strongly and persistently before the Minister of Finance and the Minister of Customs and Excise as soon as possible.

* * *

William C. Ridgway of New York, Secretary of the National Paper Trade Association was unable to be present and sent the following telegram. "It is with real regret that I am compelled to forego the pleasure of attending your annual meeting. I have just returned from our Fall meetings and find so much work awaiting attention that it is utterly impossible for me to be out of town this week. I wish the Canadian Paper Trade Association a most constructive and successful session and hope you will express my regret at not being with you. Please remember me most kindly to the individual members whom I had the pleasure of meeting two years ago.

Paper men foregather

The annual banquet of the Canadian Paper Trade Association was held on Wednesday evening at the King Edward Hotel and afforded a splendid example of the co-operation that exists among the paper merchants and allied activities. There were gathered wholesale and retail paper distributors, executives of paper mills, officials of selling organizations, printers and a representative of the Toronto Typothetae to number of nearly one hundred and the work-together spirit pervaded the gathering generally. Under the able chairmanship of President C. J. Kay, of Vancouver, and the general oversight of Secretary N. L. Martin a program of snappy addresses, stunts and music filled three hours of solid enjoyment and at the close the banquet was voted the best that has been produced in the five years of the Association's history.

Relying to the toast to the Paper Industry in Canada. Edward Beck, of Montreal, Manager of the Canadian Pulp & Paper Association gave a succinct review of activities from the manufacturers' standpoint. "It has been stated many times and by many different people during the last six months that we have seen the end of the period of depression," he said, "and that we are on the high road to prosperity. A general review of the Pulp and Paper Industry in Canada confirms these statements, for although there are still weak spots, we are on the whole getting back to a sounder, more prosperous basis than we have occupied for the past two years. We are not entirely out of the woods but we can see the edges and the trail appears fairly clear. Our industry depends naturally on all other industries and upon business in general and there is no question that business is looking very much better than it did six months ago. Improvement may be slow, in many lines it certainly is , but it is continuous, which means a good deal.

"Production is increasing in all grades of paper. In most lines it is from 10 to 30% greater than in the first nine months of 1921. The production of bookpaper in August was the highed since 1920. Board production in September was the highest since October 1920 and the production of all grades of paper for the first nie months of this year was 24% greater than in the corresponding nine months of 1921. Although exports of the better grades of paper have not been good. shipments to Canadian customers are considerably better than they were in 1919.

"If we examine our exports for the first nine months of the year we shall have cause for satisfaction. Kraft paper exports were practically double the exports for the whole of 1921. Newprint exports are only 12,000 tons short of the total of 1921. Book, bond and writing paper do not show up as well but they are improving. In January our reports of book paper were 118 cwts. and in August 6,600 cwts. In January also we shipped 250 cwts. of bond and writing paper, while in September our total was 1,840 cwts.

"Of course our industry is greatly affected by the conditions in other countries, particularly in the U. S. A. That there is greater activity in the paper trade generally is shown by our exports of pulp. We have exported as much ground wood in the first nine months of this year as we did in all 1921. We have shipped more kraft pulp than in the whole of 1921 and our sulphite exports were greater than the total for last year by 20%.

"The depression was a reaction that was a perfectly natural result of conditions in 1920. During the past eighteen months we ought to have learned many useful lessons. We have written off our lossses, introduced economies and indulged in a regular spring house-cleaning. Our houses ought to be in order to take full advantage of the returning prosperity. There is a possibility that the consumer has held off purchasing too long, and that advancing prices may cause a temporary inflation which will be of more harm than benefit to the manufacturer, but their general trend of business will undoubtedly be in the right direction for some time yet to come and we may expect to see the improvement in our industry well maintained."

Brief addresses in reply to the toast to "Our Guests" Were given by C. F. McFarlane, of McFarlane, Sons & Hodgson, Montreal, and W. A. Sutherland, secretary of the Toronto Typothetae, while Sir John Willinson, K B. in speaking to "A Greater Canada" dealt immigration problems and the plans of the Canadian Colonization Association. Enlivening the proceedings throughout were chorus singing by the diners and several good features by professional entertainers, while from the ranks of the paper men themselves was recruited some very good vocal talent.

Save Our Forests

By ROBERT W. CHAMBERS

From McCall's Magazine for October, 1922
(Reprinted with author's permission)

A treeless nation is a decadent nation.

When the forests of a country are neglected the mental and moral health of the inhabitants begins to decline.

Nations made treeless by the hand of man are dying nations. Nations which once were great and which no longer count are those the forests of which have been ruthlessly exterminated.

No matter what political cataclysm has overtaken and submerged peoples whose governments foster and care for forests, their potency remains, their vigor still endures, their racial resurrection is certain.

Take a map of the world and look upon the peoples who gradually are perishing. Those doomed lands are treeless. They are nations which, once mighty, have become negligible.

Neither in industry, nor in science, nor in art do they now contribute anything vitally constructive or creative. In the councils of world races—save for a feeble, peevish and purely selfish cry—they do not utter any sound. Theirs is the drowsy dream of glories past. Theirs is the sunset— golden still—that edges night, and the false, reflected light of night, and the unstirred silence of racial annihilation.

Once there were trees in Spain. Once China grew vast forests.

So scepters pass.

Without trees there would be little, pehaps no human life on this planet. There would be little life at all, possibly none.

It is the leaf that enables us to eat and drink. Only through the laboratory of the living leaf is our nourishment prepared, directly or indirectly. The green leaf gives us oxygen for our lungs, and uses what carbon dioxide we expel. Our food is partly mineral. We should die for lack of it unless predigested for us by vegetation.

The living leaf prepares food for man and cooks it by sunshine.

Our food and raiment begin in the living leaf. The leaf enables us to drink. There would be little sweet water in the world—little rain—except for the sheltering leaves of trees.

Minerals in solution—elements made available by water— are the food of trees. From the mesh of tiny feeding roots, up through the soft sap-wood, and out into the leaves is carried this mineral food which nourishes trees. Each leaf is a delicate little chemical laboratory through which the circulatory system of the tree passes. Each leaf transforms the inorganic into the organic, digesting, preparing food for itself and for man. And through each leaf the tree breaths. If in any of us God has planted the vaguest love and desire for beauty, then we ought to grow forests sufficient to satisfy that craving. For, in all nature, nothing nobler and lovelier was ever made by God than the virgin tree in its intact chasity and beauty.

A tree is a living thing. It has no mind, yet possibly it possesses something equivalent to intelligence. It has no nervous system, yet it is sensitive. It has no power of locomotion, yet it may advance or recoil.

All other attributes of life it possesses; it is born of the union of two sexes; it breathes, eats, drinks, digests, sleeps, grows. It is subject to illness and recovers with nursing. It survives wounds; its scars heal; antisceptic surgery can save it.

And, like all things living, it is mortal. What we call death is the physical finish of it, and of us.

It is not difficult for us to understand why our pioneer forefathers hated the forests which covered our country and turned it to a perpetual twilight.

Except where lakes or water-courses broke the vast continuity of trees, all was sunless shadowy silence.

No underbrush could grow in these dim forest aisles; the high, thick tapestry of foliage shut out all sunshine. Only on prairies, marshes, or along lakes and streams and seas, where the forests edged the sun, could any lesser vegetation take root and survive.

To live, our forefathers had to eat. To clear a little place in the sun for a patch of corn was a herculean task. A sort of frontier fury was born in the minds of those whose starved struggle to eat was met everywhere by the huge, gloomy, solid ramparts of living forests— a vast, gigantic barrier to sunlight without which no fruits of earth are garnered.

Hatred for the forest was an evil heritage for us. Heed lest it be not our national undoing. Where forests die, waters die. Where waters die, the fruits of the earth perish.

And out of those mulitlated and abominable wastes where axe or fire or both have passed, unguided by knowledge or common sense, are born tornadoes that devastate and kill; floods that destroy fertility, harrow the shrinking earth to its rocky ribs, and turn arable land to desert.

Springs, once protected by the spongy mesh of roots and mosses, dry up; rivulets disappear, brooks dwindle rivers shrink into warm and narrow channels bordered by burning boulders bare as bleached bones.

Rains bring rushes of flood water only, terrifying inundations that come in the twinkling of an eye, thunder by in devastating fury and are gone, leaving behind dead springs, dying streams, and the ghastly bones of withered rivers.

The forest hatred inherited from our pioneers has degenerated into the stupidity of apathy. And with it the land is degenerating, too.

The people of the United States are not celebrated for their love of beauty. Any appeal to them on the ground that beauty is a necessity to the civilized world be listened to with the indifference born of ignorance. Forests are beautiful. Many agree; but will exterminate those same forests if a few dollars can be made out of the operation.

As Omar might have said: "What can their money buy that is more desirable than the forests they have sold to destruction?"

That isn't the point. The point is that the destroyers of forests have made a rotten bad bargain no matter what they get for the transaction.

The situation is comparable to a fruit-grower who picks a ton of luscious grapes from his vines. Fine! That's what the vines are for.

But consider the ass who would rip up vines, roots and all' whenever anybody came to buy his grapes! The next year there would be no more grapes to sell.

Next decade or so there will be no more lumber to sell.

That's the story. It is the story of a singular creature known as The Great American Ass.

Three hundred years ago the forests and the fertility of America were supposed to be inexhaustible.

Today vast tracts of once fertile soil are exhausted and can be bought for almost nothing. And three-fifths of the original timber of the United States has disappeared.

Today we are using lumber four times as rapidly as we are growing it. Once the uncut forests of our country covered 822,000,000 acres. One-sixth remains. All wood-lands, even including cut-over and burned areas, amount to about half the original virgin area.

Of idle, fallow, unused, and stupidly neglected land suitable only for forest growth and once bearing trees, 81,000,000 acres have been so ruthlessly cut or burned that it has become a wretched, useless, unproductive waste.

Three-quarters of the forests of New England are exterminated.

In a few years New England will import what lumber it requires.

New York, today, produces less than one-tenth of the lumber it requires.

Pennsylvannia is now obliged to import eight per cent. of the lumber it uses.

The white pine of Michigan, Minnesota, Wisconsin, is nearly gone; the yellow pine is three-fourths gone from the South; in the Middle States the timber is practically exhausted; twenty years will end both the hard-wood forests of the Appalachian region, and those of the Mississippi.

In twenty years the cypress, too, is doomed to vanish.

What remains? The Pacific Coast timber. And in thirty years, that, too, will disappear.

When the forests go, the waters go, the fish and game go, crops go, herds and flocks go, fertility departs. Then the age-old phantoms appear, steathily one after another—Flood, Drouth, Fire, Famine, Pestilence.

The picture painted here isn't a pretty one. Nor have the colors chosen been too lurid or too thickly laid on. Alas, they have been toned down! It's a rotten situation.

There are two ways of facing a rotten situation; get under the bed-clothes and try to forget it; or get up, put on your pants, go out and face it.

Of course the thing to do is to cut out the rottenness from the situation and turn it into a hopeful and practical one.

There is time, still. We'll have to pay for our asinine ignorance and indifference—pay in hard cash. Every pocket will feel it; every pocket feels it now. It's going to cost us what Broadway calls "real money." That can't be helped. The Piper must be paid. The thing to do is to pay him, send him away, and get down to brass tacks.

Now, then, here is the problem and the necessity:

We ought to grow sufficient timber in this vast land of ours for own needs.

We ought to grow enough for profitable export.

We ought to grow enough permanently to protect our springs, watercourses, rivers our water power our navigable streams, the fertility of our fields, the welfare of our herds and crops.

We ought to grow enough to protect the health of our people.

We ought to grow enough to protect our birds, for, without them, our crops ultimately would be destroyed.

We ought to grow enough to give shelter and expansion to our game birds and animals, to our fur-bearing animals, to our fish.

There is no reason why we should not use our timber and have it, too—take each year what we require from our forests, and still retain our living forests—stately, permanent, useful, beautiful forests paying in a hundred charming ways for the room they take and care they require—yes, paying even in money, and paying well as first class, profitable investments.

The Government should assume control of all lumbering in the United States.

This proposition is radical and it sounds like interference with private business. But it must come to that or our country becomes like China, a land of perpetual famine and poverty—like China which not very long ago could boast forests as magnificient as our own.

All lumbering should be under governmental control. The most drastic regulations should govern every operation which entails the felling of trees for whatever purpose.

For every tree felled in the United States a permit should be obtained. For every tree felled, another should be planted immediately.

Our hundreds and hundreds of thousands of waste acres—acres sterile, fallow, burnt over cut over—which now yield nothing, should be planted to forests

Where is the money to come from? For every "market" felled a fraction of a cent tax to Government—the entire sum to be spent in reforesting this wasted mutilated land.

Federal control first of all; then Federal and State encouragement.

Seedlings two-year, three-year transplants, grown in Federal or State nurseries, should be made attractively available to all who desire to start a patch of woods.

Every farm has its sterile, arid strips, of little or no use to agriculture, useless even for scanty pasturage.

It often has occured to the writer that in the country, when two young people marry, no better provision for children, who ought to come, could be imagined than the planting of the waste acres with trees that would be a source of income to those children when grown and ready to marry.

As a nation we Americans are inclined to live for the present only. Seldom do we take thought for those who are to follow us—even for those to whom we owe every responsibility.

All woodlands ought to be, and can be, a source of perpetual income to their owners. On the acerage depends the income. Always lumber will be in demand. Always there will be need of home consumption also.

Let the Federal Government control; the State foster and encourage and make acquisition easy. Would it be a hardship if a State law made it obligatory that a certain percentage of every farm should be planted and maintained in forest?

There is another matter which the writer has considered recently; the planting and maintenance of county forests in every state. Every county contains land worthless for any other purpose.

What finer memorial to those who served in the Great War than a County Forest, offered, planted, guarded and maintained in honor of those who fell by those who survived?

Such forests, properly controlled, could maintain themselves —pay for their up-keep.

Could anything be finer for a soldier's memorial than a beautiful woods where timid wild-life of the region might find refuge and breed in safety—where the springs and brooks would be protected, where the people could enjoy the quiet and charm which only the green sliience of the woods affords?

This country's well-being, prosperity— yes, its very survival—lies in the swift resurrection of its forests.

Somehow this work will have to be done, and done very soon.

How would you do it?

BOOK REVIEW

COLOUR: CHARTED AND CATALOGUED. A Key Reference to Pigmental Colour. By E. Fellowes. London: Geographia, Limited. Price, £3 3s.

The great need in the discussion of colour is a common basis for nomenclature. "So many men, so many opinions," is particularly true in the determination of shade. Apple green, sky blue, mole, brick, are cases in point in which there is diversity of opinion.

It is nearly two hundred years since attempts at colour standardisation and the provision of charts were attemped. For scientific and purely technical purposes some excellent results have been achieved, but hitherto a comprehensive yet simple scheme has not been evolved until the chart before us, which, with the Lovibond tintometer glass numbers — and these are employed as the simplest means of providing a common basis — and a nomenclature derived entirely from well-known natural objects from the three kingdoms, fills a need for a means of definite determination as to what is meant when a name is applied to a colour.

In this chart there are 400 examples, all of which can be exactly produced by mechanical means through the use of the Lovibond glasses. The colours shown are printed on pure white paper, and are carefully arranged so that they can be visualised without influence or interference of the more powerful tints.

The introductory reading matter is very well written, and is both interesting and instructive. For instance, the discussion of colour **qua** colour, the derivation of colour names, and forms of colour blindness are most entertainingly put. The chart is fully described in a way that will appeal to intelligent readers, as the methods by which the author has set to work and her particular reasons are well explained. The paper maker who is called upon to produce varieties of tints will do well not only to possess himself of the chart, but to master its contents, a task that will give more delight than irksomeness, and will well repay the effort expended. — Paper Making.

PARCHMENT PAPER

Mercier, in the year 1844, observed that if concentrated sulphuric acid is allowed to act on cotton, the fabric acquires a parchment-like character. This effect is simply the extension of the general reaction of strong sulphuric acid on cellulose, which had long before been observed in the case of paper, and which has been commercially employed in the manufacture of parchment paper. According to Mercer, this effect is obtained by the use of sulphuric acid of 49.5 to 55.5° B., and he observed that the cotton apparently underwent a chemical change that made it more susceptible to the action of certain dyes.

It was apparently Mercer who was the first to observe the effect of this treatment on paper. By treating paper with sulphuric acid of various strengths from 115 to 125° Tw., and at a temperature of 50 deg. F., he found the paper to be translucent and considerably strengthened. The paper used could be either sized or unsized. By impregnating it with gelatine and drying previous dipping it in the acid, he obtained, after washing and drying, a "very fine white paper, which folds quite easily."

This mercerised paper was probably regarded by Mercer rather as an article of curiosity than as one of practical value; but a few years afterwards it became manufactured evtensively by others as the useful material now known as parchment paper.

It is customary to employ unsized paper and to immerse it in sulphuric acid diluted with one third to one quarter its volume of water cooled. The cellulose fibre is rapidly attacked, the paper becoming transparent owing to the swelling and gelatine sation of the fibres, and after this the reaction quickly becomes one of solution. But if the time of treatment is properly regulated and the treated paper rapidly washed in water, the acid compound is decomposed, and the resulting gelatinous hydrate of cellulose is fixed as a constituent of the paper. When the product is exhaustively washed and dried it gives a tough translucent sheet. — Paper Making

SAVE THE TREES

The Cleveland Plain Dealer says: China is a country of floods and famine because the Chinese civilization is older than ours. Centuries ago the Chinese had eradicatd practically all the trees from their densely inhabited provinces. The posterity of the destroyers has paid for their folly a heavy penalty. Shall the Americans of today prove themselves as guilty as were the Chinese many centuries ago? Look at the photographs of the vast barren wastes of the interior of China and determine to do your utmost to save the Americans of the future from the curse of treelessness. The forest fires of the last week, with their sudden and immense destruction, should stir the American friends of the trees to redoubled efforts. The object lesson of destruction which is unpreventable should be effective in checking destruction which is not only preventable, but actually unprofitable, undesirable and unreasonable.

GOING UP!

Many men in the pulp and paper industry are sure to become leaders and to hold positions of responsibility. They will fit themselves for advancement by investing in Education. Write the Editor for particulars of correspondence cources in Pulp and Paper Making.

HOW SHALL WE DEVELOP LEADERS?

(Editorial in *The Valve World*)

The most insistent call that we hear today is the call for leaders, for men of courage and convictions, of ability and division, of initiative and energy, of character and enthusiam. Everywhere this need is felt. In almost every line of human activity—with the possible exception of business—there is a conspicuous absence of competent leadership, but nowhere is this so pronounced as in public affairs. Where efficient and inspiring leadership always is essential, we look in vain today through our own and other lands for enough of conspicuous leadership to set the world to rights and to marshal humanity once more for the march of progress.

How shall we produce and develop the required leaders? for without them we cannot hope to travel far. We have in the world today three political systems out of which must come the world's leaders. These systems are: Autocracy, Democracy, and Communism.

Autocracy received such a staggering blow in the recent war that it is now practically a negligible source of competent leadership. This leaves us Democracy and Communism. Which of these is the more likely to give us the sort of leaders we need?

It is inherently repugnant to Communism to produce conspiuous, or even notable, leaders. When Communism encourages leadership, it ceases to be Communism. Its essence is a commonality of interests, a certain dead level, that frowns on the mere suggestions that one man can be more competent, more progressive, more successful, more far-sighted, more resourceful, more purposeful than others. Communism aims to suppress or to kill first of all the individual desire for leadership, the initiative born of this desire and the ambition that urges men forward. To look for the sort of leadership we need from Communism is to expect the practically impossible.

Thus we come to our last resort and our last hope—Democracy. It contains all the essentials for the development and encouragement of leadership. Democracy alone can give the world the leaders it now so sorely needs because:

1. Demoncracy expresses the will of the majority, and the will of the majority furnishes the largest following for leadership.
2. Democracy insists that rights, opportunities, and obligations shall be impartially equal, that every individual shall have equal opportunity to take that position in the organized community to which his character, ability and ambition entitle him.
3. Democracy encourages the desire for leadership by giving to individual the widest latitude for self-expression and development consistent with a recognition of an equal right and an equal opportunity on the part of every other individual in the organized community. In other words, Democracy furnishes the keenest competition for leadership, therefore is the most likely to secure the best.
4. Democracy fosters individualism, and the world never yet saw a leader who was not a pronounced individualist. Individualism and leadership are inseparable.

It is, then, through the spread of Democracy and the fullest and freest encouragement of democratic individualism that we are to develop our leaders. Only out of the genuinely self-governing peoples will come that conspicuous and competent leadership which is now our most imperative need and without which we cannot even hope to march forward in that harmony and freedom and achievement which constitute the one great inlienable right of humanity.

POWER EXPOSITION WILL DRAW FROM ALL INDUSTRIES

Engineers well known in industrial and public utility power generations make up the Advisory Committee which is guiding the National Exposition of Power and Mechanical Engineering. This exposition will open at the Grand Central Palace, New York City, on December 7th at noon and will extend through to December 13 (except the intervening Sunday). It will immediately follow the annual meetings of the American Society of Mechanical Engineers and the American Society of Refrigerating Engineers. Irving E. Moultrop of the Edison Electric Illuminating Company of Boston heads the Advisory Committee, and his colleagues are: Dexter S. Kimball, President the American Society of Mechanical Engineers; Alexander G. Christie, Chairman, Power Division A. S. M. E.; Fred Felderman, National President Association of Stationary Engineers; Milan R. Bump, President National Electric Light Association; N. A. Carle, Vice-President, Public Servise Production Company of New Jersey; E. B. Katte, Chief Engineer, Electric Traction, N. Y. C. R. R. Co.; Fred R. Low, Editor "Power;" David Moffat Myers, Consulting Engineer; Calvin W. Rice, Secretary The American Society of Mechanical Engineers, and the managers, Charles F. Roth and Fred W. Payne.

This Advisory Committee is keenly alive to the importance of an exposition that will stress the engineering phases of the problems involved in the economical uses of fuel and the more effectual generation and utilization of power. The effect of such an exposition must be far-reaching and the plan outlined by the Committee insures a show that will benefit the manufacturer who uses only a small boiler for process steam as well as the engineers of the great cement, ceramics, metallurgical and power generation industries, whose fuel and power problems are extensive and severe.

The list of firms who have already reserved space shows that all apparatus and materials used in harnessing the energy released from fuels will be represented. The general appreciation of the importance of the exposition further insures the showing of the newest devices and best methods.

The program for the week has been arranged so that those interested especially in fuels and power can attend the Technical sessions on these subjects at the annual meeting of the American Society of Mechanical Engineers.

A hero is not only a man who does some one great thing. He is a hero who lives a life, uneventful it may be, and yet so full of quiet strength that all who meet it day by day are made better by it.

Life's strongest motive is the ideal. The great discoveries in science were carried on not through the hope of material reward, but the realization of an idea. The Unseen rules the world.

One resolution I have made and try always to keep is this: "To rise above little things."—*Jonatham Edwards.*

UNITED STATES NOTES

A new water power corporation, organized for the object of utilizing the power of Northern New York streams, has been formed by interests affiliated with the Northern New York Utilities, Inc., and the Northern New York Trust Company. The corporation is capitalized at $1,000,000 and is headed by John N. Carlisle, president of the Northern New York Utilities, Inc., and formerly New York State Highway Commissioner. It has purchased from the St. Regis Paper Company and the Hanna Paper Corporation the water power at the six mills of these companies, which develop about 38,000 horsepower. In addition the new corporation has acquired rights on the Raquette River capable of developing about 60,000 horsepower. This probably aggregates the largest hydraulic power development in New York State and the East, with the exception of Niagara Falls. The new corporation's board of directors is composed of Floyd L. Carlisle, Frank A. Empsall, John J. Warren, R. M. Maltby, William K. Dick, J. Adolph Mollenhauer, Jonathan Buckley, Alvah Miller, Thomas J. Walsh and William P. Creager. With the exception of Mr. Walsh, all of the men are identified with the paper industry in Northern New York. The powers required by the Power Corporation are the Deferiet and Herrings mills of the St. Regis Paper Company, and those of the Hanna Paper Corporation at Norwood, East Norfolk, Norfolk and Raymondville. In making public the organization of the new power corporation, Floyd L. Carlisle made it plain that it would in no way compete with the Northern New York Utilities, Inc. Its objects, he said, is to make easier the building of storage reservoirs and to facilitate the distribution of surplus water power generated at paper plants. The corporation has authorization to issue $5,000,000 in bonds.

Use of hardwood at $15 a cord is being recommended to New York City's Hudson River suburbanites as a coal substitute by the National Forestry Program Committee. Unlimited quantities are available in the Upper Hudson River valley at about $12, according to J. R. Simmons, Albany secretary. Mr. Simmons indicates that this cutting of waste timber for fuel would help the forests. He explained this as follows: " Survey of the State's wood resources as a substitute for coal during the coming winter has shown that the State's forests would be improved by taking the fuel shortage as an opportunity to clear away what the foresters call the weed trees."

Damage estimated at $75,000 was caused by a fire at the plant of the Bloomsburg Paper Company, Bloomsburg, Pa. Twenty men have been thrown out of employment pending the repairing of the damaged plant.

A new division of the Pulp and Paper Mill Superintendents' Association is being organized at Holyoke Mass. Edward T. A. Coughlin, head of the technical department of the Allied Paper Mills, Kalamazoo, Mich., has been authorized to get preliminary plans for the formation of the division under way. A meeting will be held at Holyoke, November 18, which will be attended by J. H. O'Connell, national president of the Pulp and Paper Mill Superintendents' Association. The Michigan division held its October meeting last week at Kalamazoo. An illustrated talk on power and general mill and machinery lubrication was given by J. C. Ryan of the Standard Oil Company.

The S. D. Warren Company's reel of moving pictures depicting paper making will be exhibited following the dinner of the New York Club of Printing House Craftsmen to be held at the Hotel Pennsylvania New York City, November 16.

Speaking before the City Club in Cincinnati recently, Secretary of Agriculture Wallace threw down the gauntlet to those who would transfer the Forestry Service, an auxiliary of the Department of Agriculture, to the Department of the Interior. Mr. Wallace served notice that the department does not agree with those who seem to have the notion that Government forests should be administered simply on the theory of the disposing of the timber after the manner in which private forests have been administered. Restrictions of the cutting of "ripe timber" so that other trees will replace those cut is a cardinal point in the Forest Service's program for timber conservation, he said. "The protection, conservation and growth of our forests is one of the greatest of our national problems," Mr. Wallace declared. "More and more," he said, "owners of private timber land are coming to appreciate the value of the Forest Service and to see that they need the sort of scientific help which the department can furnish."

The Interstate Commerce Commission has denied an application of the Chicago, Milwaukee and St. Paul Railway for itself and other carriers, in which authority was asked to continue rates on paper and paper articles from points in Wisconsin and Menominee, Mich., to St. Paul and Duluth, Minn., Superior, Wis., and group.

The Sutphen Paper Company, the National City Paper Corporation and Vernon Brothers & Co., have been appointed New York agents by the Marvellum Company, of Holyoke, Mass. Export agents of this line in New York are the Parsons Trading Company and A. M. Capen's Sons.

The progress of reforestation in New York State is shown by the large number of trees sent out by the State's Conservation Commission for fall planting. During September orders were received for no fewer than half a million trees. Most of these trees will be set out on nonagricultural lands, which is a circumstance of economic importance. The demand for Norway spruce has been notable, one of the largest single orders coming from the Chateauguay Pulp and Paper Company, which is setting out 150,000 of these trees. In municipal planting Carthage, the first New York village to take up reforestation, is still in the van. It now boasts of having the finest municipal forest of any community of its size in the United States, 585,000 trees having been planted on 2,000 acres of its local watershed. Trees planted fifteen years ago are now from fifteen to eighteen feet in height and have a diameter of six inches. It is estimated that a million feet of lumber will be cut annually from this reserve when it reaches its best development.

Directors of the Great Northern Paper Company have called a special meeting of stockholders for November 2 for the purpose of authorizing an increase in the capital stock from $8,300,000 to $25,000,000, according to reports from Boston. It is believed that the declaration of a 200 per cent. stock dividend will follow the approval of an increase in the capital.

Technical Section

REVIEW OF RECENT LITERATURE

A.-Properties, Chemistry and Testing of Raw Materials and Finished Product

A-3. Rice Straw as a Paper Making Material. CH. GROUD. **Papeterie,** xliv, 733-736, (Aug. 25, 1922). A brief discussion of the merits of rice straw with an account of tests carried out at the French School of Paper Making, Grenoble. The straw was cut into 3 to 5 cm. lengths, charged into a rotary spherical digester, washing during charging to remove dirt, and steamed for one hour with steam at 1 to 2 kilos pressure. The condensed water was drained out and cooking was carried out with 13 per cent of caustic as a 5 deg. Bé liquor under 3 kilos (about 45 lb. per sq. in.) for 5 hours. The pulp was defibered and washed, and was bleached cold with 16 % bleaching powder as a 40 Be liquor. The yield was 30 per cent. The pulp was sized with rosin and loaded with starch. It was difficult to run on the machine owing to softness of the sheet and sticking to the presses. The breaking lengths were: machine direction 2,450 m., cross direction, 1,868 m., average 2,159 m. The lower portion of the straw would give even less favorable results. The pulp is suitable as a filler in fine papers—A. P. -C.

A-3.; K-4. Preparation of Paper Pulp from Papyrus H. STEINHILBER. Fr. patent 538,207, March 15, 1922. **Papier,** xxv, 302-303, (July 1922). Also, English patent 180,097, July 12, 1922. In the preparation of paper pulp from papyrus, the material is first boiled, steeped or retted, and then subjected to mechanical pressing with simultaneous washing to remove the pith, and then beaten for pulp. The removal of the pith may be effected during the pulping, the mechanical pressing being omitted. A preliminary grading may be effected by splitting off the bark either before or after the boiling or steeping. The waste products, mainly pith, are in wet condition subjected to great pressure, and formed into briquettes, etc., in quantity sufficient to supply the entire fuel requirements for the process.—A. P. -C.

A-4; E-1. Determination of the Chlorine Consumption Value of Wood Pulps. R. SIEBER. **Zellstoff u. Papier,** ii, 27-29, (1922); **J. Soc. Chem. Ind.,** xli, 409A (June 15, 1922). Tables are given showing that the chlorine consumption values of sulphite pulps as determined by the method previously described (**J. Soc. Chem. Ind.,** xl, 382A, 1921) stands in definite relationship to the percentage of lignin as determined by Willstatter's method. The relationship is not one of strict proportionality but is indicated by a curve. The chlorine consumption value of the pulps is approximately proportional to the bleaching powder consumption. The connections between the above characters will serve as a basis for the numerical classification of the various types of commercial wood pulps, according to their hardness and bleaching qualities.—A. P. -C.

A-4.; A-15. The "Baryta Resistance" of Wood Cellulose. C. G. SCHWALBE and H. WENZL. **Zellstoff u. Papier,** ii, 75-80, (1922); Translation by C. J. West in **Paper Trade J.,** lxxiv, No. 25, 50-52, (June 22, 1922). The authors propose the following analytical method to express the percentage of resistant cellulose contained in commercial wood pulps: treat 3 g. of air-dry cellulose with 200 cc. of cold saturated barium hydroxide solution and boil under a reflux condenser for one hour. Filter hot through a finely-perforated Gooch (a filter is not necessary), wash with hot water, treat with cold 1 per cent hydrochloric acid, wash free from barium, and dry 4 hours at 105 deg. C. A correction is made for the ash. The method is capable of more exact control than the usual alpha cellulose determination, but the results are not entirely equivalent and the "baryta resistance" value is not put forward as a substitute for the alpha-cellulose value. About one-third of the pentesans are dissolved by the barium hydroxide, and two-thirds by the caustic soda. Lignin is but little affected; rather more is removed from Mitscherlich pulp than from Ritter-Kellner pulp. Cupric-reducing substances are largely but not entirely removed by the baryta treatment. Sulphite pulps of normal types show baryta resistance values distinctly lower than their alpha-cellulose values. Soda and sulphite pulps which have had a separate special alkaline digestion show baryta value higher than their alpha-cellulose values. Specially purified sulphite pulps show approximately equivalent values on the two tests. Information is thus afforded concerning the previous history and chemical condition of the wood pulp.—A. P. -C.

A-4; A-15. The Determination of Alpha-Cellulose. P. WAENTIG. **Zellstoff u. Papier,** ii, 12-18, (1922); **J. Soc. Chem. Ind.,** xli, 409A, (June 15, 1922) The alpha-cellulose determination, as carried out at present, is an entirely empirical test, and the residue does not represent a purified, resistant, true cellulose constituent of the original pulp complex. It is shown that the ratio of caustic liquor to cellulose, the temperature of maceration, the manner of dilution before filtration, and the mechanical subdivision of the pulp exert considerable influence. The conditions of the test should be most rigidly defined. The following changes in the procedure are suggested: 3 g. of wood pulp to be macerated with 30 g. of caustic soda solution; the paste to be diluted with 5 times its weight of water before bringing on the filter: a constant temperature say 18 deg. C. to be maintained; time of maceration to be extended, say to 2 hours; state of disintegration of the pulp before treatment to be agreed upon.—A. P. -C.

A-7; E-4. The Solubility of Sulphur Dioxide in Suspensions of Calcium and Magnesium Hydroxides. W. T. SMITH and R. B. PARKHURST, Mass. Institute of Technology. **J. Am. Chem. Soc.,** xliv, 1918-1927. (Sept. 1922) The article reports an investigation of the solubility of sulphur dioxide in water, milk of lime, and milk of magnesia and includes a description of the apparatus used. Partial pressures of sulphur dioxide up to 760 mm., temperatures from 5 deg. to 60 deg., all proportions of calcium and magnesium, and suspensions of total alkalinity up to one equivalent per liter were used in the experimental work. The concentration of sulphur dioxide, as sulphurous acid, is found to be proportional to its partial pressure. With

solutions of the same alkali concentration, the percentage salting-out effect increases with but not in proportion to the temperature. With solutions of constant temperature the percentage salting-out effect increases with but less than in prooportion to the alkali concentration. Varying proportions of calcium and magnesium have no effect upon the equilibrium concentrating of sulphur dioxide as sulphurous acid.
—A. P .-C.

A-7; E-4; E-5. The Use of Lime in the Sulphite Pulp Industry. P. A. PAULSON. **Paper Mill,** xlv, No. 26, 14, 16, (July 8, 1922). Brief outline of the theory of the sulphite process and of the preparation of sulphite cooking liquor, comparing the relative merits of milk of lime and tower systems for acid making, and of straight lime and of lime and magnesia acids for cooking.—A. P. -C.

A-7. Process for the Preparation of Liquid Sulphur Dioxide from Dilute Sulphurous Gases. Fr. patent No. 514-025, MANUFACTURE DE PRODUITS CHIMQUES DU NORD. **Industrie Chimique,** viii, 270-271, (July 1921). The dilute sulphurous gas is compressed and sent upwards through a tower where it is absorbed by a descending stream of heavy tar oil (other than anthracene oil), preferably having a specific gravity of about 1, which absorbs large amounts of sulphur dioxide. The oil saturated with sulphur dioxide is heated in a heat exchanger, and the pressure is then relieved, whereby it loses the greater part of the dissolved gas, together with a certain amount of volatile constituents. The latter are recovered, while the gas is compressed to the liquid state.—A. P. -C.

A-12; K-10. The Use of Starch in Paper Manufacture. W. A. NIVLING. **Paper Mill,** xlv, No. 26, 4-8 (July 8, 1922); **Paper Trade J.,** lxxv, No. 2, 32, 34, 36, 38, (July 13, 1922). A description of the properties of starch from a paper making standpoint, and of its use for engine sizing in conjunction with rosin, for surface sizing, for coating, for adhesives, and for wood veneer glue.—A. P. -C.

A-14. Testing Colored Materials for Fastness to Light. H. S. THAYER. **Paper Ind.,** iv, 807, 809, 811, (Sept. 14, 1922); **Paper Mill,** xlv, No. 36, 20 40 (Sept. 16, 1922). A description of the construction, operation, and results obtained with the color-fastness testing device, the "Fade-Ometer." It employs the violet carbon arc mounted in a cabinet with 40 specimen holders located at a uniform distance of 10 inches from the arc itself. The importance of the test is discussed.—I. G.

A-14; K-1; M-12. Instrument for Measuring the Degree of Beating Paper Pulp. E. W. L. SHARK. **Papierfabr.,** xx, 845-852, (1922). An instrument called a "stuff-spindle" has been devised for testing numerically the degree of beating of pulp during its treatment in the hollander. It consists of a hollow metal cylinder terminating at the top in a slender open tube carrying at the bottom a wire sieve of plain No. 50 mesh, 2 cm. in diameter (3. 14 sq. cm. in area.) When the instrument is immersed sieve downwards in diluted pulp, water enters the cylinder at a rate depending on the degree of beating, and the time is noted during which the instrument sinks to a mark on the tubular stem. In another form of instrument the stem is graduated in cc. of water passing into the body in one minute. The test is carried out on pulp diluted to a consistency of 0. 5 per cent fiber, at a temperature of 15 deg. C. The "stuff degree" is defined as the number of cc. of water passing through the sieve of 3.14 sq. cm. area in one minute at a standard fiber-concentration and temperature.—I. G.

A-14. Average Tearing Strengths of Commercial Papers. ARMIN ELMENDORF. **Paper Ind.,** iv, 790-792, (Sept. 1922.) Figures are given for the tearing strength of a number of samples of kraft, bond, and ledger papers supplied by a number of manufacturers. The tests were carried out by the U. S. Testing Company, New York, at a humidity of 45 to 48 per cent, with the Elmendorf Tearing Tester.—A. P. -C.

A-15; L-7. Transformation of Cellulose Complexes During the Manufacture of Artificial Silk. W. VIEWEG. **Zellstoff u. Papier,** ii, 18-19, (1922); **J. Soc. Chem. Ind.,** xli, 54A, (July 31, 1922). The insoluble residue obtained by grinding cellulose with sodium hydroxide solution is the sodium alkyl-oxide of alpha-cellulose, and reacts as such with carbon disulphide, benzoyl chloride, etc. Alkali cellulose having the formula $(C_6 H_{10} O_5)_3$. NaOH, is prepared by steeping cellulose in 18 per cent sodium hydroxide solution and pressing the product; this product is unaffected by air or other oxidizing agents. The cellulose xanthates capable of spinning contain the complexes $(C_6 H_{10} O_5)_3$ and $(C_6H_{10}O_5)_4$. —A. P. -C.

A-15. Cellolisoboise. H. OST and G. KNOTH **Cellulosechem.,** iii., 25-38 (9122); **J. Soc. Chem. Ind,** xli, 409A, (June 15, 1922). A description of the procedure followed by the authors to obtain celloisoboise from cellulose (yield 2.5 per cent), and of the properties of the pure compound.—A. P. -C.

A-15. Alkali-Soluble Modification of Cellulose. E. KNOEVENAGEL and H. BUSH. **Cellulosechem.,** iii, 42-60 (1922); **J. Soc. Chem. Ind.,** xli, 458A, (June 30, 1922). A modified cellulose or hydrocellulose which, even after drying, is completely soluble in cold 8 per cent sodium hydroxide solution is produced by hydrolyzing viscose cellulose with acids, The hydrolysis may be effected by Girard's method, by Lederer's method, but most conveniently by the action of dry hydrogen chloride gas on air-dry viscose cellulose in a closed evacuated vessel at the ordinary temperature. The percentage of acid absorbed corresponds with the quantity of moisture in the cellulose, and by regulating the degree of humidity and the time and temperature of the reaction the conversion can be so controlled that a product completely soluble in 8 per cent caustic soda is obtained, which is reprecipitated substantially without loss on accidification. Only cellulose modified or hydrated in certain ways is capable of forming the alkali-soluble product after hydrolysis. Viscose cellulose yields it most readily. —A. P. -C.

A-15. Behavior of Oxidized Cellulose. E. KNECHT and F. P. THOMPSON. **J. Soc. Dyers and Col.,** xxxviii, 132-136, (1922); **J. Soc. Chem Ind.,** xli, 497A,, (July 15, 1922). From a study of the copper number of cellulose oxidized with permanganate in the cold in the presence of sulphuric acid, it appears that the initial action of the oxidizing agent results mainly in the formation of aldehydic and ketonic groups, while the later action is complicated, possibly by the production of carboxylic groups. Nitration of the oxidized cellulose showed oxidation had taken place at the expense of the hydroxyl groups of the cellulose.—A. P. -C.

A-15. Oxycellulose. E. HEUSER and F. STOCKIGT. **Cellulosechem.,** iii, 61-74, (1922). Oxycellulose yields furfural and carbon dioxide when distilled with 12 per

(Continued on page 960)

PULP AND PAPER NEWS

Mr. E. B. Murray, vice-president of the St. Maurice Paper Company, Limited, and the Union Bag and Paper Company, N. Y., was in Montreal last week.

Mr. Francis W. Warren, of Paris, France, is in Canada on a three weeks' business trip. Mr. Warren is the agent for several pulp manufacturers located on this side of the water.

If expectations are fulfilled, the mill of the St. Lawrence Paper Mills, Limited, Three Rivers will be in operation at the beginning of the year. The building will certainly be ready in time for production at the commencement of 1923. The magazine grinders are supplied by the Waterous Engine Works Company, Brantford, Ont.; the screens by the Sherbrooke Machinery Company, Limited, Sherbrooke, P. Q., and motors by the Canadian Westinghouse Company, Limited, and the Canadian Crocker-Wheeler Company.

The Howard Smith Paper Mills, Limited, are extending the sale of their blotting paper by means of a modified form of the advertising blotter instead of an advertisement, a slogan or a message is printed on the blotters which are distributed periodically by a firm to its staff. As an example, we may quote the message given to the staff of the Howard Smith Paper Mills, Limited, on one of these blotters — "Be one who takes an interest in his firm's interest." This was followed by the signature of Mr. C. Howard Smith, president of the Company. The idea is to print a series, each with a different message. Some large firms have already taken up the suggestion and ordered blotters. The Howard Smith Mills have been also sending out very helpful hints to lithographers and printers, showing effective ways of using "Beaver S" papers for letterheads, etc.

The Quebec Provincial Government spent $208,000 in fighting forest fires which could have been prevented, in almost every instance, by a little foresight.

The Wilkinson Paper Company, whose old premises, No. 76 Bay Street, were recently sold to the John McSloy Company for $70,000, have acquired new premises at 63-71 Wellington Street, west. The total floor area of the building is 25,000 feet. Of this the Wilkinson Paper Co. have reserved the basement, an area of 11,500 feet.

The constitution of a board, assuming provincially the duties which the Commerce Board endeavored to assume for the Dominion, with power to regulate resale agreements, to the end that the consumer may be protected, shapes up as the possible outcome of the hearing being conducted at the Parliament Buildings in Toronto into what has been termed the proposed anti-combines act. At the hearing John F. Ellis, of Barber and Ellis, manufacturing stationers, Toronto, stated that the keynote of the whole organization of firms interested in his line was co-operation. It used to be, he said, that business was war. Then they had become more reasonable and got away from the fighting and found it profitable to work in conjunction with one another. He took serious objection to one clause which made the head office of any concern in the province responsible for acts of subsidiaries in other parts of the Dominion. He cited the fact that his company maintained a plant in Winnipeg. Their manager there might have made some agreement for which the firm in Toronto could be haled into court and penalized. He thought such an enactment was ultra vires.

According to a charter just granted to E. Evans Company, Limited, which has been organized in Toronto, the company is authorized, among other things, to manufacture and sell paper novelties. The capital stock is $40,000.

Messrs Warwick Bros. and Rutter, wholesale and manufacturing stationers, King Street west, Toronto, have opened up a new market in South American countries for their lines, chiefly high-grade papeteries for the coming Christmas trade. A big consignment of goods were shipped from the company's plant during the past week, destined for Georgetown, British Guiana; New Amsterdam; Port au Spain, Trinidad; Bridgetown, Barbadoes; Buenos Aires, and Kingston, Jamaica. Harry Woods, manager of Warwick Bros. and Rutter reports that his firm has met with great success in their invasion of these new markets and that their export trade is growing rapidly.

William Braby, Secretary of the Wilson, Munro Co., Limited, wholesale paper dealers, Duncan Street, Toronto, has just returned from a six weeks trip to his old home in Edinburgh, Scotland. Before coming out to this country, Mr. Brady was several years with W. H. Whyte & Sons, Limited, wholesale paper dealers, Edinburgh and of course he dropped in to see his old firm. Speaking of paper trade conditions in the Old Country, Mr. Brady stated that trade was only fair and that at the present time export trade with Australia was considerably better than that with Canada. Generally speaking, however, there were signs of a revival in export trade and it was believed that a fair amount of business would be done with Canada.

The Sault Ste. Marie Board of Trade has taken up with the E. B. Eddy Co, of Hull the matter of the location of a branch factory at the Soo, which, it is claimed would be an ideal site for such an industry. The advantages of the city and district have been placed before the company and the board has strong hopes of inducing it to build there.

P. L. Colbert, Vice-President of the Valleyfield Coated Paper Mills, was called at the head office of the Provincial Paper Mills in Toronto during the past week.

I. H. Weldon and S. F. Duncan, of the Provincial Paper Mills, Toronto, and John Martin, of the John Martin Paper Company, Winnipeg, have dropped the cares of business for a spell and are in the north country with gun and game bag.

T. J. Allan, of Paper Sales, Limited, King Street, Toronto, has returned after an enjoyable outing in the Karwarthat Lakes district.

Miss Thomas, of the Arabol Manufacturing Company, of which Paper Sales Limited, Toronto, are the Canadian representatives, called upon the paper trade in Toronto during the week.

Bushmen's wages in the camps in Northern Ontario which draw their supply of labor from the Government employment office in Cobalt will be higher this winter. Hiring on a monthly basis, men are being offered from $40 to $50, against $26 paid last year. The demand from both logging and pulpwood camps is brisk, but men are scarce so far.

A complimentary dinner was given a few evenings ago in Toronto to Douglas J. Brown by the directors and staff of the Wilkinson Paper Co., Limited, Toronto, upon the eve of his marriage. Mr. Brown, who has charge of the company's Hamilton office, was presented with a handsome clock, with suitably engraved name plate, from his business associates, together with a cheque from the firm. After their honeymoon Mr. and Mrs Brown will take up their residence in Hamilton.

Mr. Kenneth M. Clark of the James W. Sewall timber cruising force is in Newfoundland on a short job.

The Transcontinental Paper Company, Limited, has been organized in Toronto and an Ontario charter secured authorizing the company to engage in business as exporters and importers, and manufacturers and dealers in pulp wood, lumber and paper products. The company, which has an authorized capital of $5,000,000, are the successors of the Transcontinental Development Company which over a year ago obtained pulpwood concession in the Magagami limits from the Ontario Government. It is understood that the company will erect a pulp plant on their concessions. Tilley, Johnson, Thomson and Parmenter, 85 Bay Street, Toronto, are the Company's legal representatives.

James W. Sewall of Old Town, Maine, Timber Expert, is in Western Pennsylvania on a short cruising trip. Mr. Sewall only recently returned from Western Quebec where his men have completed a detailed cruise and mapping of about one million acres of land for McLachlin Bros. Ltd., of Arnprior, Ontario.

GEORGE MILLEN HONORED

George Millen, who directs the destinies of the E. B. Eddy Company at Hull, P.Q., has just celebrated his 84th birthday, attended by the felicitations of his many friends from all parts of Canada.

Upon his arrival at the offices of the company this morning, Mr. Millen found the British and American flags floating from the mastheads over the different mills and factories in his honor, and, surrounded by as many of the staff as could crowd into his office, he was presented with a congratulatory and eulogistic address by Mr. S. S. Cushman, one of the senior members of the firm, and a basket containing 84 American beauty roses, one for each year of his life.

HOWARD SMITH ON BUSINESS TRIP TO EAST

C. Howard Smith, president of Howard Smith Paper Mills, Limited, is leaving tomorrow night for an extended trip to the Far East. He will first visit the business centres of China and Japan and later proceed to Australia and New Zealand, stopping at the Phillipine Islands on the way.

The company has established an excellent market for its products, particularly in Australia and New Zealand, and Mr. Smith plans to spend a month in those two countries. Besides its agencies there the company also has representatives in such centres as Hong Kong and Shanghai.

Mr. Smith expects to return home in February.

QUEBEC FOREST FIRES COSTLY

The Provincial Government spent $208,458.24 in fighting the forest fires this summer and employed 1,390 persons in the protection of forests, apart from those helpers engaged in emergency cases.

The total amount of the damage caused by the fires had not yet been made up as reports were still coming in. This was the information given to Gen. Smart in the Legislature this morning by the Hon. H. Mercier, Minister of Lands and Forests.

SMITH MILLS TO MAKE BLEACHED SODA PULP

After a recent meeting of the directors of Howard Smith Paper Mills, Limited, it was announced that the company will proceed shortly to erect a plant for the manufacture of bleached soda pulp. So far the requirements of this product in Canada have been met by importation.

The new plant, which will form an addition to the already large and important unit of the company located at Cornwall will have a capacity around 15,000 tons per annum.

The soda pulp will be used for mixing with sulphite pulp to go into the manufacture of certain grades of paper, the varieties produced by the Company having grown to a marked extent in the past couple of years.

The principal ingredient in soda pulp is poplar wood of which there is a great abundance in Canada. The company already has an up-to-date plant for the manufacture of bleach at Cornwall plant so that with the addition of the new plant it will be more self contained than ever, producing the largest proportion of raw materials of any Canadian paper manufactory for the production of its various grades of paper. The three plants of the Company are located at Beauharnois, Cornwall and Crabtree.

PAPER MAKING OPPORTUNITIES IN THE SOUTH

Chicago, Oct. 26.—The growing importance of the paper industry to the southern pine regions has been recognized by the Southern Commercial Congress, in its invitation to the American Paper and Pulp Association to have a speaker from the south appear on its program at the November convention in this city.

The paper industry has already arranged to be represented, and though no speaker on behalf of the southern states has been selected, it is assured that some member of the American Paper and Pulp Association will tell the Congress what the future holds in the use of southern pine.

Governmental statistics have shown a notable tendency toward the development of paper mills in the south, to use the rapidly growing southern pine and similar species for pulp, rather than the northern spruce. So far this wood has not been successfully used in quantity for the making of news print paper, but extensive use has been made in wrapping, fine paper and board paper, particularly when using the sulphate process.

The utilization of southern pine for news print seems to await the discovery of processes for extracting the pitch on a commercial scale. At present the processes are too expensive to make paper at the low price required for use on fast newspaper presses.

WHAT WASTE PAPER AMOUNTS TO

Waste paper in the amount of $50,000,000 will be bought by paper mills this year, it is estimated by the American Paper and Pulp Association, to be converted into new stock. This represents an increase of some $20,000 000 over the waste paper bill of last year. To-day there is a shortage of waste paper among the mills using this raw material and the price has mounted until in some districts waste paper is bringing as much as wood pulp. Book paper mills in the Middle West are paying as high as 3 cents a pound for good magazine stock, while mixed grades, used in paper board, are sold for $35 a ton f. o. b. Chicago. Householders are now afforded a chance to sell folded news and magazines for a reasonable price.

cent hydrochloric acid, but in relatively small quantities only, maximum values being obtained only with extremely oxidized residues. By disgestion under pressure with 1 per cent sulphuric acid, the major portion of the substance which yields furfural and carbon dioxide is split off by hydrolysis, and a barium salt was obtained which showed many of the reactions of glucoronic acid but was not identical with barium glucoronate. This substance is regarded as the "pure" oxycellulose which occurs only in small quantities in combination with a portion of the cellulose in the oxycellulose preparations. It is an aldehyde-carboxylic acid presumbaly formed by the oxidation of a terminal alcoholic group of a cellobiose residue or of an aldehyde group liberated by simultaneous hydrolysis —I. G.

A-16. New Synthetic Bearing Metal. Chem. Met. Eng., xxv., 207, (Aug. 3, 1921).A new bearing material, called "Genelite," consists of a mechanical mixture of a high grade "synthetic bronze," and graphite, the latter amounting to about 40 per cent by volume of the mass. It is made by mixing very finely divided oxides of tin, lead, copper (mixed in the proportions required to form a high grade bronze) and graphite in sufficient excess to reduce the oxides to metals and still leave the required content in the finished material. The tensile strength is very low and the compressive strength high. It is porous to the extent of absorbing 2.15 per cent by weight of oil. A bearing made from this material never seizes or "freezes." It is especially valuable for self-lubricating bearings.—A. P. -C.

D.-Mechanical Pulp Manufacture

D-5. Filling a Pulp Stone Cavity. W. A. MUNRO **Pulp and Paper.**, xix, 837, (Aug. 11, 1921). Cavities may develop in pulp stones on account of sand pockets or other imperfections in the texture of the stone, such condition not being apparent before the stone was put into operation in the grinder room. The hole is cleaned of sand, made deeper and wider, at least four inches deep and preferably one or two inches deeper. It should be wider at the bottom than at the top, and the ides should be made corrugated so as to give the filling a better hold. The composition for filling consists of new and best quality cement and of old pulp stones which have been broken up, about 33 per cent of which is finer than one-eigth inch. The bottom of the hole, up to the point to which the stone will wear down, is filled with a mixture of equal parts of cement and broken stone, and the remainder of the cavity with a mixture of 50 per cent cement, 25 per cent fine sand or binding particles, and 25 per cent of coarse sand or cutting particles. After allowing to set for 24 hours the surface is smoothed by cutting down gradually with a coarse diamond burr. The filling wears down at the same rate as the remainder of the stone, the production is not lessened and no difference can be observed in the quality of the pulp produced. (Another pulp manufacturer claims it is dangerous practice to do this. J. N. S.)—A. P. -C.

E.-Acid Pulping Processes

E-2. Determination of Methyl Alcohol in Sulphite Spirit. R. SIEBER. **Papierfabr.**, xix, 189, (March 4, 1921); **Paper**, xxviii, No. 12 22-23 (May 25 1921) Translation by C. J. West. Owing to the composition of sulphite spirit, the usual oxidation methods in which the methyl alcohol is oxidized to water and carbon dioxide are not suitable as other impurities are oxidized to carbon dioxide. Deniges' method, based on the oxidation of methyl alcohol to formaldehyde and determination of the latter by means of Schiff's reagent (fuchsin sulphuric acid) is shown to give satisfactory results, with an accuracy of 0.1 to 0.2 per cent, according to the methyl alcohol content of the spirit. The procedure of the method is described in detail. The disadvantages of the method are that the color type is not proportional to the methyl alcohol content, and that the color tones of the final solutions are different, depending on the alcohol content.—A. P. -C.

F.-Alakaline Pulping Processes

F-4; M-O. Evaporation by Vapor Compression. Chem. Met. Eng., xxv, 246-247, (Aug. 10, 1921). Brief description of the Soderlund-Boherg evaporator. It consists of three elements connected with a multi-stage turbo-compressor. The steam from the evaporating space of all the elements is compressed to a sufficient extent in the first stage of the compressor for use in the heater of the first element. The excess of steam over that required in the first element is then compressed in the second stage of the compressor to render it fit for the second heater, and the residue from the second heater is then finally compressed in the last stage of the compressor to render it available for the last heater. Each element has its own circulation pump and the hot condensate from the three elements is combined and supplied to a common feed heater. One of the important facts in connection with the claims for this system is that the film of liquid under treatment circulates downward in the tubes. The rapid circulation and uniform wetting to which the surface is subjected reduce the tendency to scale formation to a minimum.—A. P. -C.

F-O. A Unique Canadian Industry-Manufacture of Kraft Pulp. W. H. SHERRIFF. **Pulp and Paper,** xix, 833- 834, (Aug. 11, 1921.). Outline of the numerous uses to which kraft pulp in being put: wrapping paper, enevolpes, bags for food-stuffs, lime, cement, hardware, etc., clothing, twine, etc., etc.—A. P. -C.

H.-Bleaching

H-4. Process for Bleaching Vegetable Materials by Means of Hypochlorous Acid. Fr. Patent No. 516-262 GEORGE ORNSTEIN, U. S. A., Dec. 4, 1920. **Papier**, xxiv, 255-256, (June 1921). Chlorine is dissolved in water in such proportions that the reversible reaction $Cl_2 + H_2O = HCl + HOCl$ goes nearly to completion. Though this solution is stable only for a limited time, it does not deteriorate appreciably during the time normally taken to bleach paper pulp. At ordinary temperatures the amount of chlorine dissolved is 0.1 g. per l.; and for higher temperatures the chlorine content can be increased. The solutions as used contain 0.01 to 0.05 per cent hypochlorous acid ($HClO$), and they bleach as satisfactorily and as quickly as the usual bleach liquors. Higher concentrations can be used by suitably neutralizing the hydrochloric acid formed, avoiding the formation of hypochlorites. This may be done by using weak bases which do not combine with hypochlorous acid, such as sodium carbonate, potassium carbonate, borax, sodium phosphate, sodium sulphate, chalk, limestone, zinc oxide, zinc carbonate, barium carbonate, strontium carbonate, etc. But even in this case the concentration of $HClO$ should not exceed 0.3 per cent to avoid deterioration of the material to be bleached.—A. P. -C.

K.-Paper Making and Equipment

K-4. Chemical Control of the Process of De-Inking Paper. C. M. JOYCE, Leominister, Mass. **Chem. Monet Eng.**, xxv, 242, (Aug. 10, 1921); **Pulp and Paper,** xix, 1030, (Oct. 6, 1921); **Paper,** xxix, No. 6, 26, (Oct. 26, 1921). The paper maker of today has little faith in new de-inking processes, because most of the processes proposed during the last 15 or 20 years have been studied merely from a theoretical point of view without taking into consideration such factors as the use to which the reclaimed stock is to be put, cost of raw materials and chemicals, value of the finished product, etc. The form of apparatus used for de-inking is less important than the careful chemical control of the process. To obtain the desired quality of product, maximum production and minimum cost of chemicals the following factors must be considered: (1) ratio of water to weight of paper treated; (2) amount and kind of chemicals used; (3) rate of circulation of the alkaline bath; (4) temperature; and (5) time. These factors are briefly discussed.—A. P. -C.

K-8. Dyeing of Straw Pulp. HEINRICH PRESS. **Papierfabr.**, xix, March 25, April 22, 1921; **Paper** xxviii, No. 16, 23-24 (June 22, 1921). Translation by C. J. West. Investigation into the behavior of straw pulp (prepared by cooking with milk of lime) towards different dyestuffs. The method used consisted in treating a 3 per cent suspension of the pulp with an excess of the dye for about 20 minutes, filtering, and determining the excess of the dye in the filtrate as follows: aliquots of the filtrate from the dyed pulp and from undyed pulp are diluted to the same volume, and the undyed solution is titrated with a dye solution of known strength until the colors match. It was found that substantive dyes were most completely fixed by the pulp, basic dyes coming second and acid dyes last. The retention of mineral pigments depends both on the fineness of the pigment and on the character of the pulp, and depends more on the beating of the pulp than on its origin.—A. P. -C.

K-10. Process for Engine-Sizing Paper. Fr. patent No. 520, 102, ZELLKOLL G. m. b. H., Germany **Monit Papeterie Francaise**, lii, 446, (July 15, 1921). Instead of the usual rosin-alum process, an easily dissociated organic salt of alumina is used without any rosin. The organic aluminium salt may be added as such to the beater or else aluminium sulphate (4 per cent on the weight of the dry pulp) is added, and an equivalent quantity of the barium salt of the organic acid is added, giving by double decomposition the dissociated salt of aluminium. Aluminium formate is particularly suitable for the purpose.—A. P. -C.

K-19. Apparatus for Drying Sheets of Gummed or Varnished Paper. Fr. Patent No. 516, 224, E. and H BUSH, England, Dec. 3, 192'. **Papier,** xxiv 254-255 (June 1921); **Monit. Papeterie Francaise**, lii, 408-409, (July 1, 1921). —A. P. -C.

K-12. Expansible Cylinder Mould for Paper Machines. Fr. patent No. 515,316, R RICHARDSON and J. F. KEY, England, Dec. 4, 1920. Papeterie, xliii, 450-451, (May 25, 1921); **Monit. Papeterie Francaise,** lii, 362-363, (June 15, 1921); **Papier,** xxiv, 256-258, (June 1921). —A. P. -C.

P-Safety Engineering and Welfare

P-1. Accident Prevention in the Sulphite Mill. F. H. ROSEBUSH. **Paper Ind.,** iv, 531-533, (July 1922). The author points some of the danger points and how to guard against them.A. P. -C.

P-0. The Engineer's Part in Industrial Safety. C. P. TOLMAN, President National Safety Council. **Chem. M. et. Eng.,** xxv, 203-205, (Aug. 3, 1921). It is brought out that properly conducted accident prevention work pays larger return on investment and operating cost than any other department of an ordinary industrial plant.—A. P. -C.

O.-Water Supply

O-2. The Filtration of Water in Paper Hills. H. LHOMME and M. ARGY. **Papeterie,** xliii, 634-638 (July 25, 1921). A description of the Gail and Noel Adam water filter and of its method of operation, together with a comparison of its cost as against that of a sand filter, showing great advantages in favor of the former, as regards both first cost and cost of operation.—A. P. -C.

R-General

R-1. International Paper Co.'s Mill at Three-Rivers, P. Q. Pulp and Paper, xx, 603-604, (July 21, 1922). Brief description of the finished mill as it appeared in the summer of 1922.—A. P. -C.

R-1. The Pulp Industry at Weymouth, N. S. ARCH BEETON. **Pulp and Paper,** xx, 535-537, (June 29, 1922). —A. P. -C.

R-1. Equipment for Pulp and Paper Mills. Paper, xxvii, No. 10, (Nov. 10, 1920). A series of descriptive articles by various authors covering saw mill equipment, save-alls, wet machines and thickeners, rag room machinery, the various sulphite acid preparation systems (milk of lime, Jensson towers, Barker towers, Crandon acid control), sulphur burners, wood room equipment, groundwood mill equipment, digesters and rag boilers, screens and screen plates, tachometers, stuff chests and tanks, beating and washing engines (including Jordans), fourdrinier machines, cylinder machines, dryers, fans, and ventilators, Noble and Wood pulper, calenders and platers, slitters and rewinders, power plant equipment, boiler room instruments, pumps, the Bellmer bleacher, the Reeves variable speed transmission, the advantages of ball bearings on the various pulp and paper making machines, and material handling machinery.—A. P. -C.

R-2. J. R. Booth's Remarkable Career. Pulp and Paper, xx, 475-477, (June 8, 1922). —A. P. -C.

R-3. The Relation of the Office to the Factory. C. N. MOLSAN, Standard Paper Box Co., Ltd., Montreal. **Pulp and Paper,** xix, 787, (July 28, 1921). The object of the office is not only to take care of all the details incident to a business, but also to keep a close watch on factory production to see that a profit shall result from its operation. Hints are given on the methods to be used for co-ordinating the various departments of the factory.—A. P. -C.

R-11. Vocational Education and the Superintendent. A. D. WOOD, Champion Fiber Co. **Paper Mill,** xlv, No. 22. 14, 44, (June 10, 1922); **Paper Trade J.,** lxxiv, No. 23, 50-51, (June 8, 1922); **Paper Ind.,** iv, 551-553, (July 1922); **Pulp and Paper,** xx, 515-516, (June 22, 1922). An outline of the advantages of vocational education in arousing the interest of the men in their work.—A. P. -C.

R-12. Concise Comments on Cost Keeping. THOS. J. BURKE. **Pulp and Paper,** xx, 491-492, (June 15, 1922). A brief outline of some of the things which the Cost Association is doing.—A. P. -C.

R-12. The Human Factor in Production and Cost Accounting. GEO. D. BEARCE anl G. A. WARE. **Paper Ind.,** iii, 1097-1101, (Nov 1921). A plea for close co-operation between the superintendents, production and service engineers, or other department heads responible for the actual operation of the plant, on the one hand, and the accountants on the other, showing the interdependence of the ones on the other in order that all may do their work with maximum efficiency. —A. P. -C.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, October 31. —If reliance is to be placed on the opinions of many jobbers, the paper trade will be active for several months—how long, it is of course impossible to even guess. Business is picking up right along. The improvement is not of the sensational order, and truth to tell, nobody desires a spectacular rise in prices, with its inevitable reaction. A steady flow of business is what is expected.

The same condition is hoped for in the pulp section, which is gradually coming into its own, after a period of dullness. Every year demonstrates the value of the industry to Canada from the export trade point of view. But for our shipments of pulp and paper, the figures of exports to the United States would make a poor showing. During the first six months of the fiscal year, they proved a very strong factor in the favorable trade balance, in the total exports of $32,500, 000.

All indications point to a sustained demand for newsprint. Canadian mills are naturally interested in general commercial conditions in the States, our chief market for paper. Trade reports affecting almost every important industry, tell of a large and increasing call for the various lines, together with a tendency for prices to advance. It is certain that advertising next year will be on a more liberal scale, and that the efforts to increase circulation will not be slackened. The outlook for Canadian newsprint is therefore distinctly of a favorable character. The International Paper Company has followed the lead of Canadian mills and fixed the price for the first half of 1923 at $75. per ton. The policy of the Canadian companies has established this as the contract price for the first six months of next year, and has headed off for the time being any efforts to put newsprint on an $80 basis. It is satisfactory to learn that there is a considerable improvement in the car situation, and that paper is being shipped with greater promptitude.

The export business in writings and book papers, especially to Australasia, is being well maintained. Although the prices obtained are by no means good, the connection is well worth keeping. The visit of Mr. C. Howard Smith to Australia, New Zealand, China and Japan is timely, and is indicative of a progressive export policy.

The demand for most lines of paper is satisfactory. The jobbers are ordering more freely. If the price of raw materials should further advance, it is pretty certain that there will be additional rises in some papers.

Waste paper is still buoyant. The chances are that the market will recede rather than advance, although it is hoped that it will stand in such a position as to encourage the collection of paper stock, which is checked when the price is not remunerative enough to warrant gathering. Rags are also in good request, while there is little slackening in the call for roofing felts.

There is no let-up in the pulp section. Groundwood is very active, with buyers for all that can be produced. The consumption is increasing and is likely to be on a still higher scale. The present quotations act as an incentive to greater output. The orders for bleached sulphite continue to come in freely; unbleached is very firm and kraft has again improved.

Pulpwood dealers are looking forward to an advance in price next spring. This expectation is based on the expectation that stocks will be then more or less depleted, and that the higher cost of cutting will also influence values. Additional reports from the Province confirm those already in hand indicating a shortage of help in the lumber camps, despite the substantial rises in wages. The men will jump from one camp to another if the wages are more attractive, and more than one concern has found that men on whom they were relying have left for other districts.

Toronto Market News

That there is a decidedly optimistic spirit permeating the pulp and paper trade of Canada generally was a fact gleaned by the Canadian Pulp and Paper Magazine's Toronto representative in conversations with many leaders in both manufacturing and paper selling who were in Toronto during the past week attending the annual meeting of the Canadian Paper Trade Association. From all quarters come reports that the paper trade is gradually picking up and that the volume of business s increasing. Paper merchants from the eastern provinces say, however, that they are up against rather severe competition from European paper houses. Despite this, however, they are doing a fairly good business and there are sizeable requisitions for most lines. Western paper houses are active and their representatives say that greatly increase business is bound to come this fall. Ontario paper merchants are fairly well satisfied with the extent of the come-back in business and see signs of further prosperity in the near future. Enquiry among mill representatives reveals that most of the plants are running full and the output of various lines of paper is staedily increasing as greater consumption developes.

COATED PAPERS. — A considerable quantity of imitation art paper is coming into the Toronto market from the Old Country and is coming to some extent into competition with coated paper, high-grade and super-calandered. Considerable British coated stock, too, is coming in but it is at a disadvantage in lateness of delivery, while Canadian mills are in a position to make prompt shipment. There is a disposition in some quarters to look for an increase in price of coated, while some argue that the conditions noted above may have the effect of keeping prices at their present level.

RAGS AND PAPER STOCKS—Mills are inclined to hold off buying and dealers profess to see signs of an attempt to break the market. Supplies of rag and paper stocks are none too plentiful, while the demand is good and prices are holding firm. Roofing stock, dealers say, should bring more money. Cotton rags are firm and good quality stock is selling freely. Strings and bagging is in fair demand but there is no special movement in it. Manila rope is in good demand. Scrap bagging is selling at $1.00: No. 1 manila rope at $6 and mixed strings at $1.20. There is practically no change in the price of cotton rags and paper stocks.

KRAFT. — Kraft mills report orders coming in freely and plants are operating close to capacity. Jobbers are using liberal supplies. Prevailing quotations are $8.00 per 100 lbs for M. F. and $8.15 for M. G.

BOARDS. — The board mills are busy and with paper box manufacturers running pretty well to capacity preparing for Christmas trade there is an excellent demand from that quarter. Chip board is still quoted at $65.00 a ton. Mills are booked with orders for some time ahead and the general indications are that the fall season in box board is going to be an excellent one.

BOOK AND WRITINGS. — Mills manufacturing these lines are all extremely busy, particularly in book papers which are in active requisition. Manufacturing stationers are using a lot of writing paper and bonds and the demand generally for all these lines is active.

PULP. — The pulp market remains firm with most lines in good demand and manufacturing and sales conditions among the mills generally satisfactory. There appears to be a considerable range of prices for bleached sulphite which is around the $100 mark f.o.b. shipping point. It was learned this week that slightly over this figure had been paid in Ontario while one of the mills sent out a 500-ton shipment of book grade bleached sulphite at as low as $80.00. Easy bleaching is quoted at from $58.00 to $60.00, with news grade selling at $55.00 at the mill. Groundwood pulp is going at from $35.00 to $40.00, f.o.b. mill and is in excellent demand, while soda pulp is firm and is being laid down in Toronto at 6 cents per pound.

NEW YORK MARKETS

New York, Oct. 28 — Special Correspondence — The Federal Trade Commission's report on the newsprint industry of the United States for September shows that a slight decline in production of print paper occurred in this country last month, as compared with that of the preceding month. Production of total news last month amounted to 125,402 net tons, contrasted with 133,236 tons produced in August of this year, 98,898 tons in September a year ago, 121,005 tons in September two years ago, 111,434 tons in September three years ago, and 95,670 tons in the same month four years ago. It will be seen by these figures that while print paper output last month was somewhat below that of the preceding month, it was far above an average for September over the past few years, even exceeding the September, 1920, production when the boom in paper was still being experienced. Of the 125,402 net tons of total newsprint produced in September, 115,899 tons were standard news. The September output was some 15,000 net tons of total newsprint and 16,000 tons of standard news in excess of an average over the past five years. Another encouraging feature of the report is that mill stocks of print paper declined during September from a total of 19,902 net tons of total newsprint and 16,017 tons of standard news at the beginning of that month to 18,810 tons and 14,687 tons respectively, at the end of September.

Announcement was made here this week that the International Paper Company is making contracts for newsprint, for the first half of 1923 on the basis of $75 per ton f. o. b. mills. Contracts for the first six months of 1922 were on the basis of $70 a ton, which was increased to $75 per ton for July and August, and to $80 per ton after September. The latter price prevails until the end of this year. The contract price of $75 per ton is similar to the figure recently named by the Canadian Export Paper Company, which hand-

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

les the output of many of the large print paper mills in the Dominion. It is understood that the I. P. in establishing a basis of $75 per ton for newsprint for the first half of next year desires to aid publishers in maintaining the large circulation which most publications have reached.

There is no question but that consumption of newsprint in this country is heavy, and that it is constantly increasing. By way of example, one of the afternoon New York dailies yesterday printed an issue of 60 pages. This was no special issue but the ordinrary Friday paper. One of the morning dailies in this city is printing an issue of 36 pages or more almost every week day with the possible exception of Saturday. Reports are to the effect that this marked increase in newsprint consumption is equalled in all parts of the States. Publishers through the Middle West and the South are printing larger issues than ever before, and, moreover, are circulating a greater number of copies. There seems little or no doubt that a new high record of newsprint consumption will be established this year.

The paper market generally is firm. The book paper situation has taken on a stronger atmosphere since western manufacturers advanced prices further, and it is stated that 7.00 c f. o. b. New York is about the lowest at which sizable quantities of machine finished book paper of good quality are now to be had. The high cost of soda pulp and the stiff prices demanded for old books and magazines are in themselves helping to strengthen quotations on book paper.

The demand for wrapping paper has settled into a steady call for supplies from various consuming sources, buyers in general stocking up in preparation for the pre-holiday season. No. 1 domestic kraft wrapping is quoted at about 7 cents a pound, and No. 2 domestic kraft at around 6.25 cents, and there is an upward tendency to quotations. Tissues are enjoying a broader demand than in a long time and most mills are refusing to quote excepting on specific quantities to regular customers.

There is a quieter demand for boh boards, and while here and there reports have been heard of producers shading prices, quotations generally are well maintained. Eastern manufacturers still quote $60 a ton for plain chip board and $62.50 on filled news board, and instances where these figures are shaded are the exception rather than the rule. Prices of old waste paper have declined to a point, however, where some board mills probably see their way clear to passing the reduction along to their customers.

GROUND WOOD—Mechanical pulp is in a very strong market position. Demand shows no let-up and about all of the supply that is being offered is finding a ready sale. Newsprint and box board mills are buying in a consistently good way, and the fact that a great many producers are conserving their output for their own use, thus reducing the amount of pulp available to outside buyers, is a bullish factor. Domestic grinders are reported receiving $35 a ton for prime spruce ground wood without any difficulty, and in some cases this price is being exceeded, sales as high as $37.50 having been recorded. Heavy rains recently have enabled grinders to increase their operations somewhat but this has had no apparent effect on the market and is not likely to so long as consumption of mechanical pulp keeps up at the prevailing rate. Importers state that they cannot bring ground wood in from European sources to sell at less than $38 to $39 a ton ex dock New York, and these high prices are serving to limit importations.

CHEMICAL PULP—Chemical wood pulp also is in a very firm market position. There is a steady demand for practically every kind and grade of pulp, and sellers are not having much trouble finding an outlet for about all the pulp they have to offer. With the time drawing near for the Baltic to close for the winter, importers are becoming increasingly bullish in their attitude and are quoting firm prices on foreign pulps. Foreign bleached sulphite is reported selling at 4.50 cents per pound on the dock here—on an average—some bleached sulphite being priced at 4.75 cents, while Scandinavian kraft pulp has sold at 3 cents per pound ex dock New York, and No. 1 unbleached sulphite at 2. 90 cents. Domestic manufacturers are generally reported to be well booked up with orders over the next several months, and are not pressing sales. Instead the trend among pulp producers is to wait for consumers to come to them to buy, thus giving the former the upper hand in making prices. Kraft pulp is particularly active, and domestic No. 1 kraft is reported bringing 3 to 3.25 cents a pound at pulp mills.

RAGS—Increasing easiness in roofing stock is the feature in the papermaking rag market. The sudden weakening of this branch of the trade is surprising, but a study of the situation reveals that present conditions are due more to heavy importations of roofing rags recently than to any other single cause. Felt paper mills apparently have covered their requirements to a sufficient extent to enable them to remain out of the market as buyers, and prices on all grades of roofing stock have consistently declined this week until No. 1 packing is now offered by dealers here at 1.20 cents a pound f. o. b. New York and No. 2 grade at 1.10 cents without attracting buyers. Foreign roofing stock also is easy, and some of the import houses are said to be taking all the orders they can get for dark cottons for November or December Shipment from European sources at between 1.15 and 1.20 cents a pound landed New York.

Other grades of rags hold fairly steady in price though demand has decreased. New cuttings are firm to strong with no signs of recession, and old whites and blues are holding their own in value. Paper mills are purchasing these rags in lots as they need them but are cautious buyers, probably feeling that with roofing stock declining other grades will develop an easier price tone too.

PAPER STOCK—Two main factors have contributed to a pronounced slowing up of business in waste paper and quite a drop in prices on some grades this week. One of these factors is the embargoes against waste paper shipments maintained by railroads out of New York. which has seriously hampered the movement of stock. The other is that a good many consuming mills which up to a short time ago were active buyers have retired from the market, at least temporarily. Prices on the low grades of old paper consequently have declined sharply, as is usually the case when this commodity fails to move toward consuming plants. No. 1 mixed paper has worked down in price until mills can easily buy today at 1.10 cents a pound f. o. b. New York, and doubtless at less than this figure. Folded newspapers are down to 1.20 cents New York, dump mixed paper to 85 cents a hundred pounds, and container manilas to 1.40 cents. On the other hand, high qualities of paper hold fairly steady. Dealers continue to quote around 4. 35 cents on No. 1 hard white shavings, 3.85 cents on No. 1 soft white shavings, 2.60 cents on heavy No. 1 magazines, 2. 75 cents on ledger stock, 2.25 cents on No. 1 old kraft paper, and 2.15 cents on white blank news cuttings

The "RED RIBBON" Belt

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TRADE PMS MARK
THE "RED RIBBON" BELT
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THE ESTHONIAN TIMBER TRADE

The Russian Correspondent of the "Timber News" contributes some interesting particulars of the timber trade in Esthonia.

Ever since the end of the war the timber market of Esthonia has continued rather dull. The Esthonian Government had then just taken over the control of the State forests (managed before by the Russian Government) as also of the forests once belonging to private owners. The prices for hewn and sawn timber, which were fixed at that time by the Government Timber Department, were far too high to encourage the trade, and the export of Esthonia timber came, therefore, to almost a standstill.

When finally, in 1921, the prices were lowered by the Timber Department, the foreign markets experienced such a serious slump in business that the export trade was again unable to develop. This year, however, when the foreign markets seem to have reached a stable level, Esthonia is once more re-entering the British market with supplies of sawn soft-woods, sleepers and pitprops.

Esthonia's present production amounts to roughly 350,000 cubic fathoms per annum, of which nearly 300,000 cubic fathoms are absorbed by the home market, leaving about 50,000 cubic fathoms for export abroad. Most of the timber exported is consigned to the United Kingdom and consists of fir, those small quantities of birch which are cut being almost entirely consumed by Esthonia's own requirements.

The exports for the first three months of 1922 amounted to £40,000 against £20,000 in 1921. These figures will naturally experience a considerable augmentation during the summer months, when they may easily reach double their above-stated value.

Next in importance to the Esthonia softwood trade stand exports of plywood, articles manufactured thereform, and furniture. The value of the export of all these goods in the course of the first three months of 1922 exceeded that of the softwood by £15,000, amounting to no less than £55,000. Considerable quantities of these goods were shipped to the United Kingdom, but Scandinavia, Germany and the surrounding countries also absorbed a fair proportion of them. Esthonia's position would have become far more important that it is now had the stipulations of the Russo-Esthonian peace treaty matured, according to which Esthonia should have enjoyed the control over a considerable area of Russian forests. Like most of the Russian promises, this hopeful stipulation never became effective, and instead we notice the Russian Government dispatching their logs to the Esthonian mills (principally around Narva) to be sawn there for export. It should, therefore, be clearly understood that timber shipped from Esthonian ports need not always be of an Esthonian provenance.

There is no doubt that the Esthonian timber trade may look forward to great developments once the Russian concession becomes operative, but until then nothing exiciting can be expected from these quarters, except that limited supply of really good quality soft woods will be available this season and that considerable quantities of manufactured timber, as plywood, etc., will be produced in ever improving quality.—Journal of the Royal Society of Arts.

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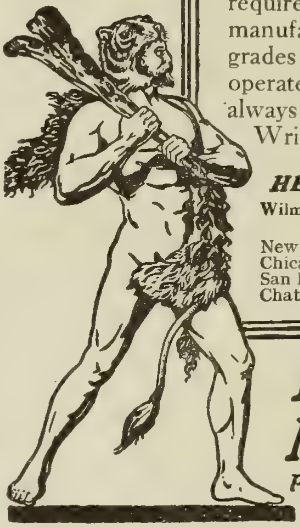

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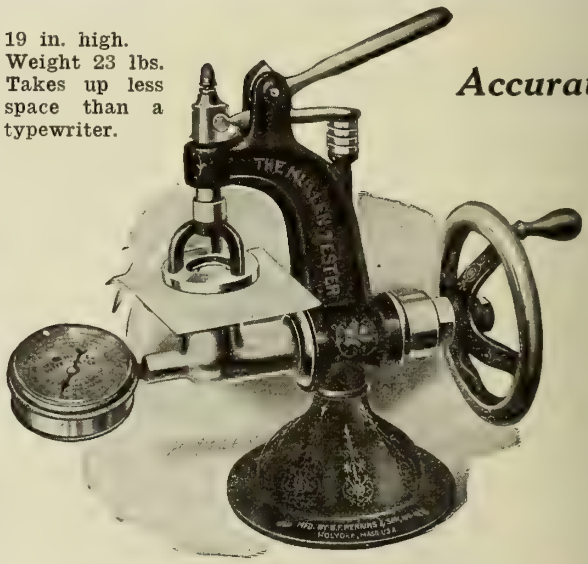

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Goodrich, Harry L.
Lacey, James D & Co.
Sewell, J. W.

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Combe, F. A.
Montabone, A. J. F.
Taylor, Ltd., H. S.

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Burroughs, Chas. W.
Management Engineering & Development Co.
Reed Co., Ltd., Geo. W.
Ross, J. O. Engineering Co.
Taylor, Ltd., H. S.

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Burroughs, Chas. W.
Carey, Jas. L.
Combe, F. A.
Ferguson, Hardy.
Hamilton Gear & Machine Co.
Hardy, George.
Jenssen, G. D. and Co.
Kimball, Herbert S.
Management Engineeding & Development Co.
Montabone, A. J. F.
Sewell, James W.
Stebbins Eng. & Mfg. Co.
Taylor, Ltd., H. S.
Wallace, Jos. H. & Co.
Williams, F. M.
Warren, Kenneth L.

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Can. Sirocco Co., Ltd.
Ross, J. O. Engineering Co.
Sherbrooke Machinery Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Experimental Machinery:

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Port Arthur Shipbuilding Co., Ltd.
Reid, C. De Wolf.

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Northern Electric Co., Ltd.
Perkins, B. F. & Son, Inc.
B. F. Sturtevant Co. of Canada, Ltd.
Ross, J. O. Engineering Co.

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Dominion Engineering Works, Ltd
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Port Arthur Shipbuilding Co., Ltd.

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Bates & Innes, Ltd.
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Christie, John Co.
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Kenwood Mills, Ltd.
Pulp & Paper Mill Accessories, Ltd.
Penmans, Ltd.
Porritts & Spencer, Ltd.
Tippett & Co., Ltd.
Warwick Woollen Mills, Ltd.
Whyte, Wm.

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Diamond State Fibre, Can., Ltd.
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Goold, Shapley & Muir Co., Ltd.
McKinnon Steel Co., Ltd.

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Walsh Plate & Structural Works, Ltd.

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Mason Regulator & Eng. Co., Ltd.
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Beveridge Supply Co., Ltd.
Elk Fire Brick Co.
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Fuller Co., Ltd.

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Niagara Wire Weaving Co., Ltd.
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Ontario Wind Engine & Pump Co., Ltd.

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Horton Steel Works, Ltd.

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The Mason Regulator & Eng. Co.
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Canadian Ingersoll-Rand Co., Ltd.
Can. Link-Belt Co., Ltd.
Diamond State Fibre Co. of Can., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton Co., Ltd., Wm.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co., Ltd.
Smart-Turner Machine Co., Ltd.
Victoria Foundry, Ltd.
Waterous Engine Works, Co., Ltd.

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Waterous Engine Works, Co., Ltd.

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Lombard & Co.
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Smallwood Stone Co.
Smallwood-Low Stone Co.

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Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works, Co., Ltd.

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Carthage Machine Co.
Goldie & McCulloch Co., Ltd.
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Northern Crane Works, Ltd.
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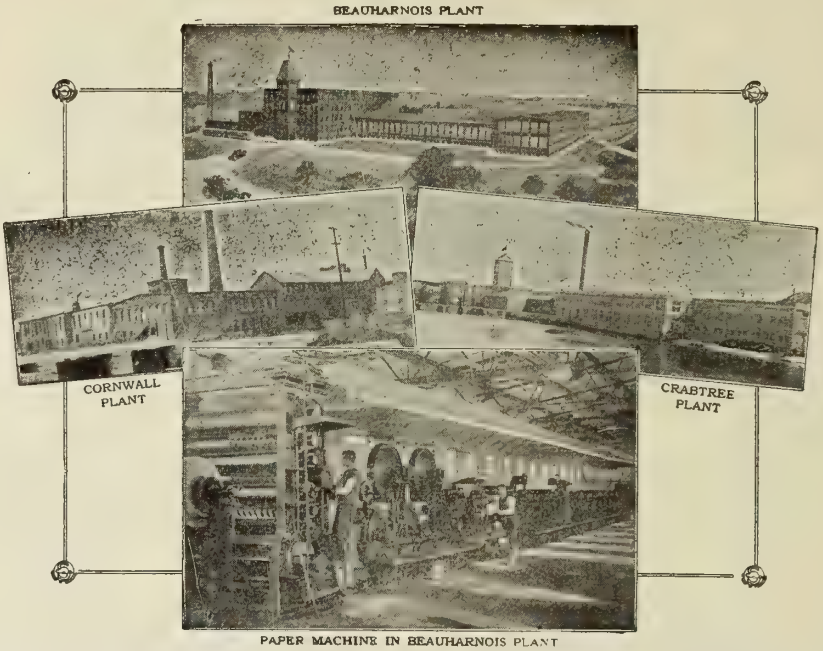

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Harland Enginering Co., Ltd.
Northern Electric Co., Ltd.

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Laurentide Co., Ltd.
Lagerloef Trading Co., Inc.
Price Bros. & Co., Ltd.
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Scandinavian American Trading Co.
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Wayagamack Pulp and Paper Co., Ltd.

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Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Donnacona Paper Co.
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Lagerloef Trading Co., Inc.
Laurentide Co., Ltd.
Mattagami Pulp & Paper Co., Ltd.
Price Bros & Co., Ltd.
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Spanish River Pulp & Paper Mills Ltd.
St. Maurice Paper Co.
Howard Smith Paper Mills.

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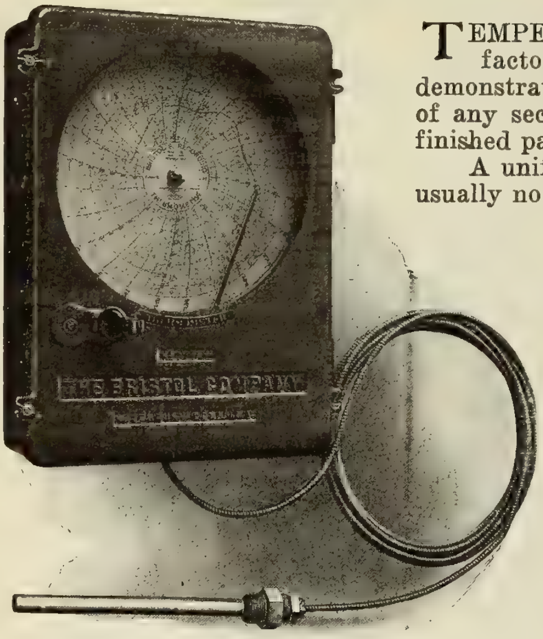

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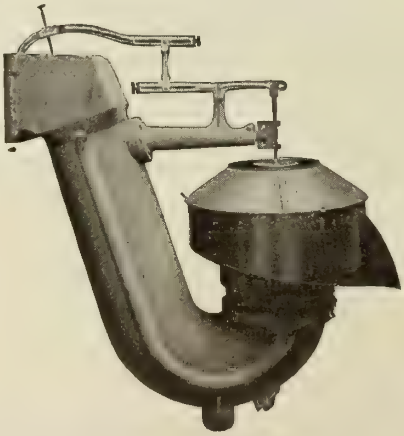

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Lombard & Co.
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Goold Shapley & Muir Co., Ltd.
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Hamilton, Wm. Co., Ltd.
Harland Engineering Co., Ltd.
Lawrence Machine Co.
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Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Victoria Foundry Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.
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Northern Foundry & Machine Co., Ltd.

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Pickles, W. F.

Regulators:

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Tallman Brass & Metal, Ltd.

Rods — Welding:

Tallman Brass & Metal, Ltd.

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Can. Johns-Manville Co., Ltd.
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Goldie & McCulloch Co., Ltd.

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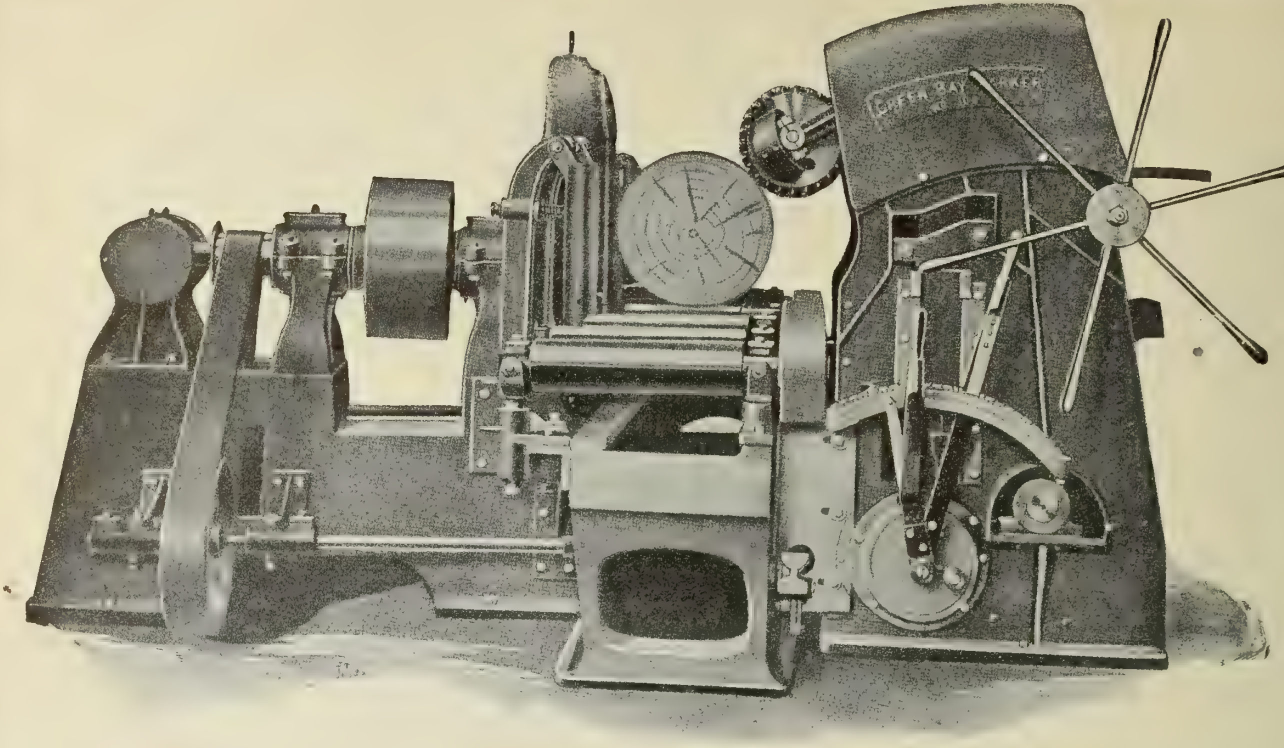

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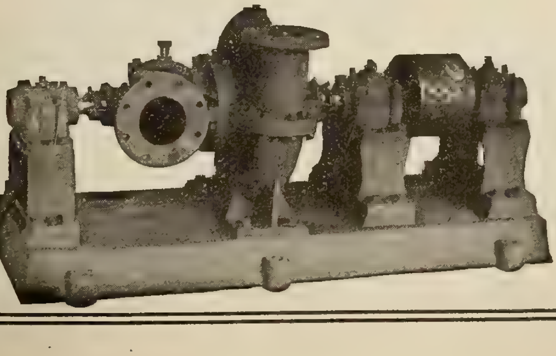

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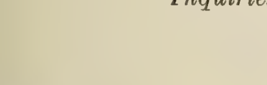

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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-:- EDITORIAL -:-

DADDY

BY ROBERT FREEMAN

It's good to take the dusty road
    With daddy,
To shoulder my share of a camper's load
    Like daddy;
Flee for a night all coddling care,
The dreads and the dangers of darkness share,
With the stars in my eyes and the dew in my hair—
    And daddy.

It's fun to sit by the crackling fire
    With daddy,
While the flames leap high and the sparks mount higher
    For daddy;
To break for once the home food ban—
Eat with my fingers out of a pan
And chatter along as man to man
    With daddy.

It's great to stretch on a sweet pine bed
    By daddy,
To vision the trails that lie ahead
    With daddy;
Gaze for a while at the spangled sky,
Sleepily smile to the man close by
And yield to Nature's lullaby
    With daddy.

Then the dawn—the dawn—and the dusty way
    With daddy!
Another vagabondish day
    With daddy;
No call has he, no cares annoy;
He's all my own, and mine the joy
Of finding the very heart of a boy
    In daddy.

RIORDON'S AFFAIRS

Riordon's affairs may not be our business, but the situation is one of intense interest in Canada and the United States. This interest extends beyond the pulp and paper industry but even if it did not, the matter would be of sufficiently wide importance to warrant more space and more lengthy comment than it will receive in this issue.

It will be recalled that during 1919 and 1920 there was a great demand, an insatiable demand for pulp and paper and fabulous prices were eagerly paid. Many concerns extended their plants and every one operated at capacity production. In some cases, excess earnings were put into plant extensions when construction costs were very high, and large sums were borrowed at high rates. The prices of all commodities were very high, and early in 1921 a reaction set in. People refused to buy, confidence collapsed generally and there was a sudden slump that set everybody sliding.

Among the concerns caught with large inventories of high cost supplies and bond issues and loans on which to pay interest, was the Riordon Company. The market simply refused to absorb their product in quantity that would permit an even break, let alone a profit on operations. Two plants were closed, and the new Kipawa plant kept going in order to maintain an organization, to hold customers, and to convert wood piles into pulp that could be sold for cash.

According to a statement just issued, the idle and starting up expense was $222,215.68 and the loss for three months ending October 31, 1921 was $1,008,097.40. From November 1, 1921 to September 30, 1922 the market has improved and the industry has gradually recovered. Sales of the Riordon Company amounted to $5,790,107.52 and the cost of same, after allowing an initial depreciation of inventories, was $5,603,656.96. There was thus a bare margin of profit, about 3 per cent., on the basis of inventories from which $1,331,074.33 had been written off. But wood costs fell during this operating period, and, by charging off $1,022,820.71, out of reserves, to bring the cost of wood actually used down to replacement value, and adding certain other income $161,794.37, the accountant finds a gross income of $1,371,065.64. This amount, however, fell $95,991.43 short of meeting operating expenses of $272,245.38 and interests on loans, mortgages and bonds of $1,194,811.69. Expenses incident to shutdowns, depreciation, previous operating losses, etc., more than wiped out the special reserves, and left a general deficit of $772,954.48.

Turning to the Balance Sheet, we find a rather difficult statement to interpret, due to the many items and comparisons. There is shown a decrease of some five millions, under current assets, in inventories, with an increase in other items under this head of about half a million, and of nearly a million under investments. Adding in the deficit, before mentioned, and some smaller items, the net decrease in assets, brings the total down by $3,622,758 to $76,447,262.22.

On the liabiity side there are several important changes. Capital stock and funded debt remain the same. Total mortgages show a net increase of $28,276, apparently accrued interest. A new demand loan (Protective committee) appears for $864,577.50. Bank loans are cut $2,785,664.76 but other changes add $266,776.84 to Current Liabilities, leaving a net improvement of $2,518,887.42, which, to us, looks very good.

Suspended and Deferred Liabilities includes various non-bank loans, overdue bond interest, taxes, accounts payable and dividends. There is a net increase here of nearly a million. Reserves are increased slightly to $2,263,489.11, while a special reserve for contingencies and depreciation of properties has been used up, as has also a small surplus.

Contingent Liabilities and arrears to sinking funds remain unchanged from the last statement.

The net change in the Liabilities is a decrease from $80,070,020.21 to $76,447,262.22, of which $47,000,000 is stock issued (authorized, $80,000,000).

It is on the basis of this statement that the Company asks for an extension of time of one year for the payment of debts. Of course, it is not expected that *all* the company's indebtedness can be met in another year's operation, but the record of the year just passed, which marks the beginning of recovery from a general business depression of great magnitude, holds much encouragement. The company's position, to us, looks considerably better, and the general trend of conditions in the industry seem such as to warrant the extension asked for.

THE GRASS IN THE OTHER FIELD

By S. ROLAND HILL in *The Broke Hustler*

You've seen it a number of times, as you have ridden through the country—the amusing spectacle of a pair of horses, mules or goats, each in different fields and each giving his neck a severe strain as he tries to get at the grass that lies over the fence.

You laughed. All right. Let's all laugh. Ha! ha!

Now, let's think if we human mortals are often just like the horses, the mules or maybe the goats. Perhaps we don't like to think of ourselves as goats or even as mules, so let's compare ourselves to horses. It sounds nicer because horses are supposed to have "horse sense."

Don't a lot of us do the same thing of reaching out uselessly to another field? "Distance lends enchantment to the view." It is so easy to magnify the difficulties of the present job, the limitations of our opportunities as we see them, and to delude ourselves into thinking that where some other fellow is lies the real chance, the green grass.

Now let's admit right off that sometimes it is true that a man is in the wrong peg—that he is a square peg in a round hole, or a round peg in a square hole. One of the greatest problems of the world is that of finding out exactly what kind of work a man can do best. Employers are just as anxious to find out that things as employees are, for it means better work and easier and a happier time for all concerned.

But the truth is that most people don't themselves know what they can do to the best advantage until they have given themselves a thorough try out. Sometimes the thing that at the very start they didn't think they would like turns out to be a job at which they are very efficient. They learned to like their work when they became able to do it well. It then became a satisfaction to them, and a joy to the employer.

On the other hand, some people find out that the work that they at first imagined was what they really like isn't the thing for them.

Therefore, the sensible thing for everybody who has a job is to stick to the job and learn to do it well before concluding that he ought to have something else.

One of the most foolish notions that anyone ever allowed in his head is this thing that "I could really do this work well, but nobody would ever notice it, so what's the use. I'll do it just well enough to 'get by'."

The real truth is that in every organization there are men in executive positions who are always looking out for men above the average, men who can do their work a little better than necessary, so to speak, who who need little or no supervision. They know only too well that the world has too few workers of this type. If you are of that type, be assured of this—that, though for a while your sincere efforts to make the 100 per cent. standard, may escape notice—sooner or later and not very later either, somebody is going to discover your value and give you all the bigger chance that you are entitled to. Bank on that.

FOREST PRESERVATION

When one considers the vast importance of the pulpwood industry, there will be commendation of the efforts of the Federal and Provincial authorities to preserve the Canadian forests in a more efficient manner. In the United States regrets are constantly heard at the careless way the fine forests have been depleted by lumbermen; consumed by fire and destroyed by insects. In this connection it is of interest to briefly quote a message to Congress concerning the dying out of American forests. The message declared: "When the forests fail the lumber business, one of the greatest industries of the country, will disappear. Suffering among all building industries will follow; mining will become vastly more expensive. The price of coal, iron and other minerals will rise. When this occurs the railroads will be directly affected and the cost of transportation will increase; in brief, when forests commence to fail, every man, woman and child in the United States will feel the pinch. Through past misuse forests are undoubtedly failing."

In the above there is a decided lesson for Canada. It is readily admitted that the Canadian forests constitute one of the world's greatest reserves of timber. That it should be ruthlessly wasted is pitiable in the extreme. It is true that the Government has done much to protect the forests, but very much yet remains to be accomplished. The population of the consuming area tributary to our forests, has increased five fold during the past half century; but its wood consumption has increased ten fold and more. In all this there is cause for apprehension. The natural resources of Canada are not only marvellous, but envied practically everywhere; that they should be squandered is nothing less than criminal.—Editorial in *The Star*, Montreal.

THE PRICELESS INGREDIENT

In the city of Bagdad lived Hakeem the Wise One, and many people went to him for counsel, which he gave freely to all, asking nothing in return.

There came to him a young man, who had spent much but got little, and said: "Tell me, Wise One, what shall I do to receive the most for that which I spend?"

Hakeem answered: "A thing that is bought or sold has no value unless it contain that which cannot be bought or sold. Look for the Priceless Ingredient."

"But what is the Priceless Ingredient?" asked the young man.

Spake then the Wise One: "My son, the Priceless Ingredient of every product in the market-place is the Honor and Integrity of him who makes it. Consider his name before you buy."—The Amphibian.

The Coarse Paper Situation in the United States

by D. C. EVEREST, Marathon Paper Mills Company Rothschild, Wis.

(A paper read at the Fall Meeting of the Cost Association.)

In the discussion of the subject "Coarse Papers" I will deal only with Wrappings, as persons discussing this subject in previous meetings have touched only on wrapping papers and I assume htat has now become a custom; furthermore, the condition of the Wrapping Paper Industry is the best barometer of the immediate outlook in general business in this country today and therefore the most interesting subject to discuss. Few economists give it the consideration it deserves but it reflects the extent of traffic in merchandise better than any other item of commerce.

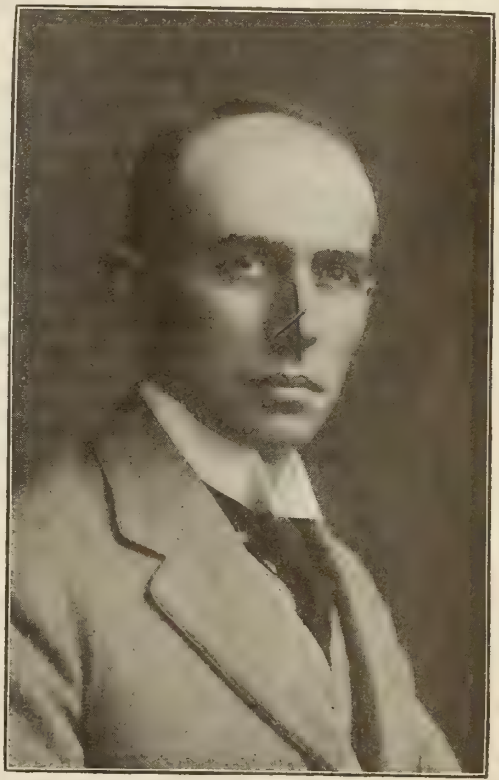
Improvement in the wrapping business means improvement in all business.

In the study of the conditions affecting wrapping papers and other paper products which have to do with the proper protecting of merchandise for delivery to the ultimate consumer, we have two factors to consider. First:— What is the present situation in business generally and the Wrapping Industry in particular? This might be termed "Surface Conditions" or "Immediate Outlook". Second:— What will be the result of the present conditions coupled with what has occurred during the preceding months? This might be termed the "Underlying Conditions" or the "Long Swing Outlook". Persons engaged in business have usually a pretty fair idea of the "Surface Conditions" or what is going on about them but few really study the underlying or fundamental conditions which govern the trend of future business and which is the basis of economical operation and profit.

In dealing with the first factor, or the "Surface Conditions", we find in the Wrapping Paper Industry today an unusual demand for paper for immediate shipment. In reviewing the statistics prepared by the Wrapping Paper Service Bureau, we find that the reports show that since the first of March of this year there has been a constantly increasing amount of orders placed with the mills participating in the Bureau Statistics and reports to the Federal Trade Commission from all manufacturers show approximately the same increase.

Over a considerable period of time we find that the probable average consumption of wrapping papers furnished by the Service Bureau mills is 28,800 tons. In March, the orders received totaled 25,772 and each mouth this has increased until the high point was reached in August of 39,393 tons and in September of 35,823 tons. From these figures you will see that orders placed have been in excess of estimated normal consumption and one might draw the conclusion that stocks in the hands of either consumers or merchants had been built up considerably, but when we examine the shipments made during the same period we find that the shipments for March were only 25,464 tons and reached a maximum in September of 34,154, but taking the average shipments for the period, they are slightly lower than the estimated normal consumption of 28,800 tons. During the same period, production has just about kept pace with shipments and stocks in the hands of the manufacturer have decreased a little over 6,000 tons, while unfilled orders have increased slightly over 17,000 tons. Total tonnage of stocks on hand amount to 21,000 tons or about three weeks' supply, but when you stop to think that this represents the paper in course of finishing, the assembling of mixed cars, all the accumulation of unsaleable paper around the mill, it leaves but mighty little tonnage available for application on orders and really does not amount to more than a few days' actual supply.

The difference between orders placed and shipments is represented in the increase in unfilled orders on hand at the mills, totaling 35,823 tons or between five and six weeks' productive capacity—so we have a picture of the conditions existing in mills representing slightly less than one-half of the productive capacity of the United States and the same general conditions exist in all the mills producing this grade as shown by Lederal Trade Commission statistics. From these we get the "Surface Conditions" or "Immediate Outlook" and the natural deduction is that the Wrapping Paper Industry is in a healty condition, but we might also say that similar conditions have existed before and that within a comparatively short time business slumped and we were far below normal and then we must consider the fundamental or underlying current and compare with the fundamental conditions then existing, which were entirely different from those existing today.



Mr. D. C. Everest

In dealing with Underlying Conditions or Fundamental Factors affecting the Wrapping paper industry, we must necessarily review the general business situation of the country, as the demand for wrapping papers and other containers dependent on the purchases made by the consumer of other commodities. When this subject was being discussed a year ago, we were then just emerging from a period of liquidation, the like of which, few of us had ever seen. There was an atmosphere of doubt and fear pervading the entire country and only a few of the more courageous people were able to glean any comfort from the then situation but the gentlemen who then discusssed the Coarse Paper situation, Mr. Geo. W. Sisson, Jr., predicted much of what has happened during the past year. It is true that some things happened in the way of strikes on the part of coal miners and railroad operatives, which were not foreseen, at least to the extent these strikes affected the surface conditions, but it is extremely pleasing to know, that although these strikes continued for a much longer time than originally anticipated and affected a larger number of men than was at first supposed, they did not upset general business conditions to any great extent and it has been plainly demonstrated that when the stage setting of fundamental factors is complete, that the business cycle is bound to continue its course, despite such temporary drawbacks.

During the last year the period of liquidation in wrapping papers and materials entering into same has been completed. We have gotten down to a point where manufacturers and merchants are able to plan their future course of business. The real fundemental factors are all set for good business. This is not merely an offhand statement of things as we would be pleased to have them, but is borne out by facts, if we will stop to analyze them.

Perhaps the most important factor to be well arranged before we may expect good business is the financial factor. During the present year the improvement in the financial situation generally has been remarkable. Bank clearings have increased sharply and the first week in October was only 8.3% less than the corresponding week in October, 1920 when an almost record condition existed. There has been an increase in loans to Member Banks on the part of the Federal Reserve Bank of $50,000,000 in the last few week. Interestrale have grown firmer and risen slightly. Commercial loans have increased. In commenting on this the Federal Reserve Agent of New York says, "These changes all indicate an increase in the demand for funds which, while it coincides in time with the seasonal needs of agriculture is more probably a reflection of more fundamental activity in the business and industrial life of the country. As long ago as the summer of 1921, forces were set in motion in business and industry which have gained impetus slowly but steadily and at last have begun to make themselves felt in the increasing use of bank credit for commercial purposes."

There is no question but what any reputable concern can today secure its credit requirements. Banking institutions are actively competing with each other for customers, and the most natural and effective way of securing customers, is to grant them their required line of credit. The financial situation is set for good business ahead; in fact, in my opinion, so far as finances are concerned, it is not without the possibilities of a second period of inflation.

Transportation is the second factor which bears on the fundamental stage setting and despite coal strikes and railroad strikes and every other possible handicap which could be placed on the railroad operators, it is interesting to note that car loadings for September were only slightly less than October, 1920. During the entire summer, car loadings have been far beyond the expectations of all observers. While the coal strike materially affected the number of cars loaded with coal, which ordinarily makes up 35% of the total rail movement, yet the increase in the movement of merchandise and miscellaneous goods has been such as to almost offset the loss in the car loadings due to suspension of coal mining and loading.

This statement of car loadings would indicate, on the surface, that the railroads are able to cope with almost any situation in so far as providing equipment for enormous freight movement is concerned, but we must remember that the equipment used has been operated without proper repairs, that everything which could be utilized, was crowed into service and even at that. there was a shortage of freight cars for the week ending September 30th of 130325 cars, or 13 ½% of the total loaded for the same week. This figure is considerably above the estimate of anyone who gave the railroad situation careful study as the figure set in July as the possible maximum shortage of cars was 60,000 by November and it was more than double that amount in September. These figures show that the pressure for transportation requirements is 13½% heavier than the present actual capacity, or in other words, this means that as an average general proposition in business the orders for commodities must be exceeding the shipments by at least an equivalent amount and probably more.

It is true that the railroads are buying an enormous amount of equipment which purchases go to help the general business conditions of the country, but before this can be delivered and before existing equipment can be repaired, we will have experienced a shortage in transportation, equipment and facilities which will have a material bearing on paper, and all other industry. Considering the immediate outlook, we must recognize the fact that coal shipments are being resumed without any falling off inshipments of other commodities, that grain shipments will also increase, that we are approaching winter with its snow blockades and general interference with transportation, and that with such conditions existing, we cannot hope that the railroads will be able to continually move the constantly increasing amount of the various products of industry.

In my opinion, Transportation will be an important factor to those requiring the prompt movement of paper or other materials during December to March.

Raw Materials and our ability to secure same are dependent principally on Labor Supply and Transportation, and as previously pointed out, the problem of Transportation does not present such a favorable outlook for the winter months. Coal will undoubtedly be the most difficult to secure. We have had compatatively quick movement of a large volume of coal since the strike was settled but for months, empty equipment had been accumulated at the mines and there was great activity for a time, but now these cars are rolling, it will take some time to get them back to the mines and there is no assurance that this can be done in time avert shortage of coal for many manufacturers. The price of coal is almost fifty per cent. above the contract price of last year.

Pulpwood is dependent on Labor and Transportation with Labor the main problem at present. Wages equal to those paid during the war are being offered and few men are coming into the camps. Each year it is becoming more difficult to secure men for the woods. Pulpwood promises to be considerably higher than during the past season and on account of the scarcity of men, it is doubtful if sufficient quantity will be produced. In this situation there is but one source of satisfaction for some of the manufacturers who are carrying over a large stock of wood bought during the period of high prices and that is that this year's price for new wood will equal or exceed the depreciated price at which the old wood is now being carried on the books of the manufacturer.

Groundwood is practically off the market and due to the light rainfull, with extremely low reservoir conditions, and during the comparatively short time until winter sets in, there seems no likelihood whatever of being able to build up the amount of stored water in the reservoirs, which, on the Wisconsin River, is only 38% of capacity, or to produce or secure adequate supplies of groundwood until the spring of 1923. Practically no foreign groundwood is available and only very limited quantities of Canadian or domestic. Cheaper grades will particularly feel the effect of this condition. Chemicals are plentiful but constantly advancing in price.

During 1921 and in the early part of this year, some revisions were made in the rates of wages being paid in the paper mills but with the increase in the cost of living, which followed the downward swing of 1921, it has been necessary for manufacturers recently to advance their rates of wage so that they are now on practically the same basis as one year ago. So, in sizing up the situation as regards the Labor and Raw Material entering directly or indirectly into the manufacture of wrapping paper, there is not one single item which is not affected either by sub-normal production or abnormal consumption or demand, and in all instances, the prices are materially higher than at any time since the reaction following the peak condition of 1920. This means increased values on wrapping papers.

Fundamentally, we have three things to consider in respect to the future in the wrapping paper business. First, the financial factor, which, as I have tried to explain, I believe to be well grounded for a long pull. Second, the condition of stocks in the hands of the merchants and consumers. If the demands made for immediate shipment, the moment an oredr is placed indicate anything, it would seem that the stocks are depleted and aside from the insistency for immediate shipment indicating low stocks, I am also advised by merchants and consumers that their stocks are below a normal point.

Third, the probable purchasing power of the individual. This situation is probably best shown to be in an excellent condition to assist in the business revival which we are now experiencing, if you will stop and try to think of some place where you know there is much unemployment, in fact any unemployment. Wages which were reduced a year ago have been increased again and the buying power of the public is in as good or better condition than it was when we thought we were enjoying prosperity in 1920. Every report you read today indicates a revival in business. Cheap money and low wages are not always desirable. The strengthening in the interest rate and the increase in wages indicates a demand for both money and labor and certainly no better condition is to be desired than a demand for both. With the financial condition all set; with stocks of paper depleted and with all the basic industries in full swing, thereby giving employment at good wages to all who care to work, I cannot see anything but a very strong continued demand for Wrapping Papers.

Some people have recently asked me about the possibility of over-production in this country and from my study of this question, I do not feel that we have an over production in this country; in fact, I believe the production of Wrapping Papers today is about as nearly balanced with the demand for that commodity as it has been for a great many years. If the ideal condition could be reached, whereby the flow of orders from the merchant to the mill would be constant, and that no great amount was purchased from abroad. I do not believe the over productive capacity of the wrapping mills in this country would more than offset the productive operating time which should be given up to the proper upkeep of these properties.

Foreign competition has its effect, no doubt. Domestic mills are producing from 65,000 to 72,000 tons per month and imports are shown at approximately 2,000 tons per month for the first six months of this year. On this basis, the importations of papers classed as Wrapping Papers may exceed the importations of like papers for 1914, but we must remember that there has been a considerable increase in the use of papers of this sort since 1914. As a matter of fact, the exports of wrapping papers from the United States for the first six months of the year showed 17,940,000 lbs. with an average valuation of $.062 per lb. against an importation of 23,335,000 lbs. with an average valuation of $.038 per lb., a difference of only about 2,500 tons or less than one day's productive capacity of the Wrapping Paper mills.

With the tariff as recently fixed and with our present ability to manufacture all of grades of wrapping made abroad prior to the war and with the constantly increasing desire on the part of merchants to buy domestic papers on account of less delay in delivery and less trouble with quality, I cannot see anything in the foreign situation which can upset the period of business activty through which we are now passing and which promises to continue for some time to come.

Never before in the history of this country has the production and use of newsprint been as great as it is today. Even war years, with all their extra editions and 1920 with its enormous volume of advertising, have been outdone by the tremendous use of newsprint paper this year. What is the reason for it? Simply advertising, and on a scale and along lines which mean cumulative benefits to industry generally. As a result of this, we will be making wrapping papers for sore time to come to wrap the products which have been and are being sold as a result of this advertising and the great use of the coarse paper of the printing industry, Newsprint.

People talk of pre-war price level and pre-war conditions. "Those days are gone forever". We shall have to accustom ourselves to a higher plane of living in every way. Of course, given the same conditions over a long period of time, with the same economic forces, we might reach as low a level as pre-war, but I do not believe it will come within our time.

Inflation of Legitimate Expansion

The question now seems to me to be whether we are in for a period of what might be termed secondary inflation or a period of legitime expansion. One writer in commenting on this situation has said that "It is a familiar fact that the course of business, instead of running evently and steadily, year after year, tends to run in cycles, with greater confidence and activity in some years than in others. The actual difference in the volume of production between good years and bad is not so much as might be thought, but the fluctuations are sufficient to cause an important amount of unemployment in the bad years, and to serously affect prices and profits. During a period of falling prices and depression, consumers economize and postpone expenditures, dealers hold off from purchases, so that the amount of buying falls below normal, that is, below the average amount required to supply their wants one year with another. While this situation exists an accumulation of wants is being made, which when released later on tends to raise demands above what would be a normal average, thus creating the conditions for another reaction.

"During the period of depression when buyers are holding off to see how low prices will go, prices usually go below the normal and remunerative level, particularly if supplies were large when the down turn began. A period of depression is a period of liquidation, both of goods and of loans; when revival begins the public has need to do an unusual amount of buying, banks have large capacity for loan expansion and interest rates are low. The exhaustion of old stocks, with easy money, thus prepares the way for revival. Wages also undergo some reduction, or, at least, labor costs are reduced by increased efficiency and choice of the best workers.

"While prices are falling, all influences combine to carry them lower; buyers hold off, creditors press the weaker debtors for payment, industry slackens and the loss of employment curtails consumption. On the other hand, when conditions begin to mend, all influences tend to help the situation. Rising prices stimulate buying, industry quickens and as the wage rolls swell consumption increases. This development, together with the rise of wages, price and interest and the increase of banks loans that naturally go with it, is legitimate wholesome expansion.

"When confidence is completely regained and belief in a lengthy period of prosperity is established, the sanguine, speculative spirit develops. It is stimulated by the deficit in many kinds of goods and constructional work that accumulated during the depression. Consumption having been **below** normal for a time, the in-demand now rises **above** normal, and stimulates the dustries to the limit of their capacity. It does not stop there, but tries to drive them beyond their capacity. Various phenomena develop now; dealers double their orders, expecting them to be scaled down, or duplicated them with different producers; manufacturers build and equip new factories to enable them to take care of the business that seems to be in sight, and raise wages to attract labor from comptitors or from other industries; advancing costs make it necesary to use more bank credit.

"By this time the situation is becoming abnormal. The demand for nearly everything is above the supply, and above the normal or average demand, to which in the long run prices are surely adjusted. It is stimulated largely by speculative anticipations and by competitive buying, supported by credit.

"The bank respond to the appeals of their customers, who say they want credit for legitimate needs in production and trade, but if production already has reached the capacity of the industries, additional credit simply finances competition for labor and materials, and drives wages and prices higher and higher. This is inflation; the use of credit as puchasing power in excess of the productive capacity of the industries."

Will the present situation develop into an inflationary period? I doubt it. It is my idea that we shall see a continued good demand for wrapping papers and on a renumerative basis, but not a repetition of 1920. Some one has said that "History repeats itself in matters of this kind, but usually with intervals which provide a considerable group of new actors."

Our recent experience is altogether too recent. The actors have not changed materially and I don't believe they are anxious to repeat the performance. If we permit this situation to develop into an inflationary jamboree such as we had a few years ago, it will be rather short lived, but with all the fundamental factors set for a long swing of good business and if we believe in it and lend our efforts to restore the proper balance in industry and with goods selling freely and with everyone employed in pushing production to capacity in a safe and same way. I can see nothing for the wrapping paper manufacturers and distributors but a good, well founded business on a sufficient increased basis of value to cover the added costs of production yhich are bound to follow with a revival in general business, such as we are now experiencing.

C. P. & P. A. WANTS BETTER ELEMENTARY EDUCATION

At a meeting of the Council of the Canadian Pulp and Paper Association, last week, the subject of the proposed establishment of a paper school by the Quebec Government was discussed.

The Council adopted a resolution to the effect that the interests of the pulp and paper industry in the province of Quebec will be served better at this time by strengthing and improving the general educational facilities of the provinces rather than by the establishment of a school of instruction in paper making it is feared would prove of extremely doubtful utility.

The members of the Council expressed the opinion that if apprentices came to the mills with a good knowledge of fundamental subjects, particularly those which would be of value in the pulp and paper industry, such apprentices could be better taught the trade of paper making in the mills than they could be in our institution of the character proposed to be established. The trouble was that boys of 15 and 16 looking for work in mills were poorly equipped, from the educational standpoint. There was no education in such fundamental subjects as were essential as a basis on which boys could be taught the trade. In the opinion of the Council, the education given in the primary and high schools was capable of improvement.

The Council of the Association endorsed the proposal for a department of scientific reserach in connection with the Association, and requested the committee of ways and means to make suitable provision for the department in next year's budget. The proposal comes from the Council of the Technical section and a special committee on industrial research ,which has had the matter in hand for two or three years. The recommendation will have to receive the sanction of the annual meeting before being put into force.

ASPHYXIATED IN ACID PLANT

On the morning of November 2nd, emmett Allen, a laborer in the Sulphite plant of the Lincoln Mills, Ltd., Merritton, was caught in the gases liberated when a steam pipe burst in th recovery tower of the acid plant. He was rushed to the General and Marine Hospital, St. Catharines, but was so severely affected that he died shortly after admission.

Conviction of ignorance is the doorstep to the temple of wisdom.

The Theory of Color

By TINCTORIUS

From the "Leather Trades' Review," London
(Extracted from "Dyestuffs.")

It is now generally known and, indeed, is conclusively proved by evidence from many different sources, that the art of dyeing leather into various colors has been practised from time immemorial. Speciments of brightly-colored leather, for instance, have been found in the cases of Egyptian mummies, with the original tint apparently unchanged, thus showing that the associated crafts of tanning and dyeing were understood and commonly followed at least as far back as 3,000 years ago. Mention is also made of "dyed skins" in various early portions of the Bible that date from similar periods of history. In those times leather was used for many of the things for which it is still in use today, including fancy or decorative purposes, and therefore the natural desire on the part of the tanner to render his product more attractive, and thus enhance its beauty, led to early experiments in the way of dyeing.

The resources which ancient man had at his command for the purpose were comparatively few, and his dyes were chiefly obtained from the vegetable kingdom. They were derived from a variety of roots, barks, flowers, etc., and their number was only slowly added to until the middle of last century, when the development of the production of synthetic dyes, chiefly from coal tar, revolutionized the whole dyeing industry, that of leather-dyeing included. The processes of dyeing have been transformed from what depended almost entirely upon "rule-of-thumb" methods, upon the use of infusions or solutions in uncertain quantities and of unknown strength, to an exact science, involving the accurate use of definite formulae.

Ancient Dyer Didn't Know

The old-time dyer, even within living memory, was accustomed to place his skins in an infusion of certain berries and leave them for an indefinite length of time, as his fancy dictated, and his finished article might be anything in color from a pale lavender to a full purple. He could not predict with any degree of certainty what shade he would get, for he worked very largely with an unkown quantity of an unknown substance.

The actual dye was contained in greater or less percentage in the crude vegetable extract which he used, but, as it had never been identified nor isolated for scientific study, the dyer could not know the definite quantity of dye that he was really using. The "strength" of the dye-bath being thus only vaguely estimated at best, the process was, of necessity, correspondingly indefinite and haphazard. In these days, however, the modern dyer is expected to, and generally does, dye "to pattern," and matches, on a commercial scale, any desired shade. This he is enabled to do by using the actual dyes in convenient powder form, blending and dissolving them according to accurate and well-understood formulae, which include the strength of the solution, the temperature of the water, and the time of immersion of the leather in the solution.

Instead of the handful of coloring matters that constituted the stock in-trade of the ancient dyer, we now have the choice of some hundreds of separate and distinct collors, a fair proportion of which are available for, and in frequent daily use by, the leather dyer. After this introduction I shall proceed, in as far as possible a non-scientific manner, to discuss the interesting and fascinating subject of dyes and the art of dyeing.

Several Rough Divisions

The subject seems to naturally fall into several rough divisions which may be broadly classed as follows:

1. The theory of color.
2. The origin and nature of dyestuffs.
3. Practical processes of dyeing.

To attain to an adequate conception of the general principles underlying the art of dyeing and the application of coloring matters generally, we must begin with the fundamental concepts of light and color. Light is what the physicist terms a form of "radiant energy," and consists essentially of a vibratory movement of the aether transmitted in all directions from the source of light, and traveling at an enormous speed approximately 186,300 miles per second.

These rays of energy, being flashed across the 90 or more millions of miles that separate us from the sun, enter our terrestrial atmosphere, and, striking the material bodies that surrond us, are reflected therefrom on the retina of the human eye, thus causing the sensation which we call "light." Of course, I refer to what is known as daylight or "white light," all other forms of light being of a secondary nature as far as importance or purity is concerned. But the vibrations or waves that constitute light are not simple in nature; they are complex, and consist of many different kinds of waves of varying lengths, and consequently (since the rays all travel at the same speed) varying in the velocity or frequence with which they impinge on the retina.

Prismatic Colors

The shortest waves will obviously vibrate with the greatest rapidity, and the vibrations will decrease in speed as waves increase in length. The waves of light of a definite length produce a definite color to our vision, and the light of the sun, when analyzed, is found to be a composite of many shades, roughly grouped into six general classes of well defined color. These are red, orange, yellow, green, blue and violet. There are also known to be certain others, among which may be mentioned the "ultra-violet" rays which possess curative influences used by the science of medicine for certain skin diseases, but as these are "invisible," and do not stimulate the optic nerve to cause any sensation of color, they may be disregarded in this instance.

If a ray of white light is directed through a triangular piece of glass called a prism, it can be thrown on to a white screen in its component colors, extending in bands or ribands of color from red, passing through the intervening shades to violet at the other end, and this is called a "spectrum." It is one of the achievements of science that the lengths of the light waves that produce any of the colors in this spectrum have been determined with great accuracy, and it is best known that the waves at the extreme red end of the spectrum of decomposed white light measure 7,000 ten millionths of a millimetre (7,000/10,000,000 mm.).

The colors gradually decrease in wave length until when the violet end is reached, they measure 4,000 ten-millionths of a millimetre. The infinitesimal size of the waves being known, and the tremendous speed at which the "ray" travels, it will be obvious that the number of waves received per second, to stimulate the optic nerve and produce the sensation of color, must be enormous; in fact, the number averages round about six hundred billions per second, more or less, according to the length of the waves.

Property of Reflecting

Most material bodies possesses the property of reflecting, or throwing back, some or all of the colored rays of which light is composed. A red substance, for instance, is one which absorbs and retains all the rays except the red, and reflects those, thus appearing to us to be red. If a body reflects the green, and absorbs the red, orange, yellow, blue and violet rays, we call that body green. Similarly, a substance such as the paper on which this article is printed reflects all the rays, and is consequently called white, but the ink, which is used to print it, absorbs all the rays and reflects none, and is therefore black.

By the use of a certain instrument it is possible to analyze the rays of light that are reflected by a given substance, and it is thereby found that there is no body in nature that is really pure in color when compared with the colors of light. If a solution of potassium bichromate is made, for instance, and placed in a glass vessel, the liquid appears to our eyes to be a clear orange in color, but when a ray of white light is passed through it, and analyzed, the solution is found to absorb the violet, blue, and most of the green rays, reflecting the red, orange, and some greenish yellow.

This proves to us that the apparently simple color of orange in this case was a complex tint of orange, red, yellow and green. Yet, the instrument is able to separate out from the white light a ray of orange that will exactly match the bichromate solution in color. So, whilst the orange of the ray of sunlight is a pure or simple color, the orange of the bichromate solution is a complex or composite one, and it is this impossibility of obtaining pure colors in nature that is a cause of much difficulty in the study of the science of color.

The Primary Colors

When it was found that most colors were blends or mixtures of other colors it was naturally asked, "Are there not some colors that cannot be 'split up' into simpler ones, that is, elementary colors?" By exhaustive experiments it was found that there are such, and they are three in number. These are known as primary colors, and they are red, green and violet. It is worthy of note, in passing, that this fact was known more than two thousands years ago, being recorded by that great philospher, Aristotle. These three colors, then are primary or simple, in the sense that they cannot be split up into any other colors, but they themselves may be blended in various proportions to form every color that the eye is capable of distinguishing.

Thus, for instance, if a ray of red is separated from the white light of which it is a component and thrown on to a white screen and another ray of green concentrated on exactly the same spot, they will be found to blend together and produce a patch of yellow color. Therefore, the color we call yellow is not primary, for it can be produced by adding together red and green. Further experiments would also prove the fact that it is not possible to obtain either red or green light by combining any two or more colors, so those two colors are undoubtedly primary in nature. The only other primary is violet, and from mixtures in varying proportions of rays of light of these three colors all known colors can be produced.

Blending of Colors

Up to this I have been dealing with absolutely pure colors, as are found existing in the ray of light, but it is obvious that the art of dyeing is concerned more immediately and itimately with colors as they are exhibited in the various dyes and pigments used to obtain colors on material substances. Seeing that the primary colors, from which all other colors may be built up, are known, it might appear logical to assume that that the dyed could work upon those colors—red, green, and violet—as a basis. This, however, is not so in actual practice. Say, for instance, I take a quantity of ordinary red paint, and add to it some green, well mixing the two, I shall not get a yellow as a result, but various shades of brown or olive green according to which color predominates in the mixture.

Returning again to the rays of colored light, it is found that by blending rays of yellow and blue a white is obtained, slightly tinged with yellow or blue, as one or the other color preponderates. But, if I mix together blue and yellow paints I shall get green as a result, ranging from yellowish-green to bluish-green. A comparative tabulation is somewhat as follows:

1. With light, red + green = yellow
   blue + yellow = white
2. With pigment, red + green = brown
   blue + yellow = green

From this it will seem that there is a difference in the two "scales" of color. In the purest form, namely, light, green is a primary and yellow is a compound, but in the practical demonstration with paints green is a compound, as it is produced by blue and yellow, and it is also proved that there is no compound of any two or more colors that will produce yellow. In fact, for the purpose of dealing with pigments or dyes, yellow may be considered as a primary color, and the others are found to be red and blue.

Easily-Solved Mystery

The natural inference would have been that as color is produced by rays of light reflected from material bodies, whatever is proved to be true concerning the rays, would also hold true with regard to the colored bodies themselves. The fact that this is not so points apparently to a flaw in the logic of the whole thing, but upon closer analysis the mystery is easily solved, and may be explained briefly as follows:

When dealing with light, as stated in the first instance, we are dealing with pure colors, but amongst the many pigments or dpes, or anything in nature, there is, practically speaking, no such thing as a pure color. Even the primaries—red, blue and yellow—are found, when analyzed, to be more or less adulterated with other tints. A yellow is made up of yellow, red, orange and green, and a blue of blue and green. If we place a blue glass and a yellow glass together and look through them we get green light, because, out of the several tints above mentioned, green is the only one that gets through both the glasses, being in preponderance. So we have:

1. The rays that are reflected from a blue body and are partly absorbed and partly reflected by a yellow body, ultimately appear as green.

2. But if rays are directed through a blue glass and a yellow glass separately and concentrated on the same spot on a screen, the result is white.

The light that is reflected from a mixture of pigments is chiefly composed of rays of the first order mentioned, and not the second. That is, they are reflected from a particle of one color to a particle of another, and so on, before they eventually reach the outside surface of the material and are reflected to the eye of the observer. Hence, when dealing with mixtures of pigments, green is not a primary, but yellow is.

Variety of Graduation

Starting with the three primaries, red, yellow, and blue, it is obvious that if we mix them in combinations of two colors, there will be three combinations possible, namely, red and yellow, red and blue, and yellow and blue. These will produce orange, violet, and green in the order named, and in each of these combinations a variety of graduations can be obtained according to the preponderance of one or the other of the two component colors. Thus, in the orange we can get yellowish oranges, or reddish oranges; in the violet, reddish or bluish shades; and in green, yellowish or bluish greens. These three shades can be called secondary colors, as distinguished from the primaries, and it is possible to carry the idea further and obtain tertiary or three-mixture colors.

This is obviously the limit of the application of this principle, as there are only three to work upon, and only one color can be got by blending in equal proportions; others may be obtained by mixing the three colors in varying proportions. These comprise the whole range of colors, other than the six already mentioned, and may, perhaps, be better understood if considered as combinations of one primary, and one secondary color, or two secondaries.

Thus, the whole scheme may be arranged somewhat as follows:

1. Primary colors—
    Red.
    Yellow.
    Blue.

II. Secondary colors—
    Red + yellow = orange.
    Red + blue = violet.
    Yellow + blue = green.

III. Tertiary colors—
    Orange + violet.
    Orange + green
    Orange + blue.
    Violet + green.
    Violet + yellow.
    Green + red.

Other Combinations

It will now be readily seen that these tertiary colors are really composed of all three of the primaries, as: for instance, orange and green equals red and yellow, plus blue and yellow. So it really amounts to roughly two parts of yellow, one part of red, and one part of blue, which is the same thing as saying one part of violet to one part of yellow. The same equally applies to the other combinations, orange plus violet, and green plus violet, so that three of the last section of the list might be eliminated.

In these tertiary groups, also, there can be an infinite graduation of shades according to the proportions used. For instance, I could take equal parts of two colors, green and violet, two parts to one, three parts to one, three parts to two, and so on to great lengths. These combinations give all the range of browns, grays, olives, russet, black, etc., and, in fact, most of the dull or subdued tints, and it will be understood now how the complex system of color, as we know it, is built up from the starting point of the three primaries.

A LITTLE TALK ON THRIFT

By S. W. STRAUS, President American Society for Thrift

It is difficult to break away from old habits, and, for this reason the hardest dollar to save generally is the first one.

After the start in saving money has been made, the way becomes continually easier because the new habits of life gradually become more fixed.

The reason many persons do not practice thrift is not that they do not appreciate its advantages, but they never can bring themselves to the point of making the start. It is so much easier to procrastinate and say "next week, next month or next year." But the best time to begin thrift is the present moment. Tomorrow will bring its difficulties, its problems and its temptations. Nothing whatever can be gained by putting off the day of a beginning in thrift.

It should be borne in mind also the amount of money one saves at the beginning is not of importance. The chief factor in the process is making the actual start. After this has been accomplished, one's own enthusiasm will assure the saving of the largest possible sums. It is well to make the matter of saving money a part of one's regular routine. Save systematically.

It also is well to keep a record of one's expenditures. In brief, try to run your personal affairs with much the same accuracy and careful accountancy methods that are practiced by wisely administered business corporations.

Bear in mind as well that, with your resolution to practice thrift and surrender some of the indulgences, pleasures and vanities of life, you will not be the loser in actual happiness. Living beyond one's means without provision for the future does not bring happiness. The sense of security that comes when one really begins to get ahead is a far more substantial and satisfying joy than any that can be obtained from pleasures purchased with money that should be saved.

Make the start in thrift today. Do not be even discouraged if the first sum you save is only a few pennies.

The important question is not how much, but when.

"SAFETY FIRST"

See your way clearly—
Ask if you don't understand—
Fix a dangerous spot—
Enlighten the new workman—
Think before you act—
You can do it—

First say to yourself—
"I am going to play safe"—
Remember to **THINK—**
Safety all the time—
That's the way it's done.

Even an undertaker is careful and believes in safety first. If you do not do as much he will get you sooner or later.

CUTTING CONDENSITE CELORON GEARS & PINIONS

Condensite Celoron, the latest development in non-metallic gear cutting materials, marks a new era in silent gears, and has been developed by the Diamond State Fibre Co., of Canada Ltd.

This material is practically faultless. To the feature of "silence," it adds all the other qualities so essential to real gear service.

Condensite Celoron is practically water, oil, and grease proof. Ordinary solvents such as alcohol, acetone, benzine, etc., do not affect it, nor is it influenced by most acids or weak alkaline solutions.

Condensite Celoron is self-supporting. Gears and pinions cut to standard sizes require no shrouds or end plates. Condensite Celoron gears should never be meshed with gears of similar material nor with gears having uncut or badly worn teeth.

The face of the mating cut metal gear should always be equal to or wider than the Condensite Celoron gear. A good grade of heavy graphite grease should be used on the face. The maximum thickness of a single sheet of Condensite Celoron is 3¼″. In making gears up to 3¼″ face certain standards of practice obtain, viz:

The diameter of the whole depth circle must not be less than two times the diameter of the shaft.

The distance from the root of the tooth to the keyway should be not less than 1½ times the height of the tooth.

For gears over 3¼″ face, the practice is to use two or more pieces of Condensite Celoron fastened together. In this case the outside blank should be not less than one inch thick.

Riveting is done under pressure. Where rivets are impractical, through bolts may be used. If machine bolts are used, countersink one outside blank to accommodate the head of the screw, and tap the opposite blank to take the thread.

The self-supporting nature of Condensite Celoron eliminates the necessity of bushings at the bore.

Under a steady load, one way rotation, the maximum fibre stress on the keyway may be safely estimated at 3,000 pounds per square inch. This figure, of course, where conditions are bad, and reversing service is necessary, must be reduced accordingly. In extreme cases, the use of a larger keyway help, or end plates may be necessary.

Tensile strength: 8,000 to 10,000 pounds per square inch.

Compressive strength: 40,000 pounds per square inch, laminae horizontal; 25,000 pounds per square inch, laminae vertical.

Transverse strength: 23,000 pounds per square inch, laminae horizontal; 25,000 pounds per square inch, laminae vertical.

Modulus of elasticity: 1,550,000 pounds on the average of 10 readings.

Specific gravity: 1.3 to 1.4.

Coefficient of expansion: .000017 per degree Fahrenheit.

Water absorption: 1″ thick .46 in 24 hours, .60 in 48 hours, 1.08 in one week; (absorption measured in percentage of original weight.)

The above tests are the average of many, in order that the user may compute the factor of safety with greater security.

Condensite Celoron is a vulcanized woven fabric thoroughly impregnated with Condensite and then hardened. It is generally conceded to be the most satisfactory for silent gear drives, and has a longer life than other non-metallic gear materials, often outlasting cast iron and brass.

Condensite Celoron is regularly supplied in standard sheets 36x36 or 36x40 and in standard thicknesses from 1/32″ to 3¼″ inclusive or blanks or finished gears can be supplied to specifications.

MEETING OF RIORDON CREDITORS

A meeting of creditors of the Riordon Co. is called for Nov. 16. at the Windsor Hotel Montreal. It is proposed that a further extension of time be granted, until Nov. 19, 1923 . The profit and loss statement, after providing for interest charges, losses on 1921 operation and depreciation of inventories, shows a deficit of $772,954.48 Against this, the balance sheet shows a gross decrease of $3.622,758. The item showing sales, from Nov. 1, 1921 to Sept. 30, 1922 of $5,790,107.52 as against cost of sales of $5,603,656.96, shows the small margin of profit in business during the past year. This is apparently improved by an inventory allowance of $1,022, 820. 71 for wood used.

CARS FOR ABITIBI RY. AND TRANS. CO.

Canadian Equipment Company Limited, 285 Beaver Hall Hill, Montreal, has just completed delivery of one hundred 41 foot flat cars with drop brake staffs for the Abitibi Power & Paper Company Limited. The side rails on these cars are drilled for automatic trip stake pockets and the capacity of the cars is eighty thousand pounds each. The Equipment Company also supplied eighteen miles of eighty-five pound rails for the main line and sixteen miles of fifty-six pound rails for sidings and feeders.

This railroad runs from Iroquois Falls on the T. and N. O. Railways to Hughes on the Canadian National Railway, a distance of about seventeen miles and will be used for logging purposes. Construction work is being done by Grenville Press Rock Company Limited, Messrs. Harry McLain and Andrew Wheaton & Son. It is expected that the new road will be in operation this winter and will be a new development of eastern logging mthods.

Mr. T. Legge formerly of the Hammermill Paper Company and until recently with Lybster Mill of the Lincoln Mills, Limited, Merritton, Ontario has returned to the Lybster Mill as Superintendent.

The lumber cut on the Restigouche River and tributaries extending into the Province of Quebec is conservatively estimated at between seventy-five and eighty million feet. Such a cut is three times as great as made last season when between 25 and 30 million feet of lumber were cut in that distric It is also quite possible that estimate will be exceeded almost to the hundred million mark.

New Brunswick losses from forest fires in 1922 have been the lowest for years. A total of 104 fires were reported, which burnt over an area of 6,910 acres. This is low compared to 1921 when 84,000 acres were burned and the average for the past four years, 52,000 acres. The total damage to private and Crown lands from forest fires was 017,280.

One who was complaining that he had no time to do a certain task, was made to think of the value of time by the sharp reply of a friend: "You have all the time there is."

News From Europe

By Special Correspondence

Finland's Wood Pulp Industries

It is reported in the supplement to the Pappers—Och Trävarutidskrift For Finland that exports during 1921 and 1922 continued to expand, while new markets have been established. It says: "Like the rest of Europe Finland suffered from the lack of water power, particularly in 1921, and, as compared with 1920. The markets were affected by the general depression. During the winter of 1921 many of the mills closed down, while the business of others was greatly curtailed. It was impossible to maintaine the price of 2500 to 2700 marks per ton for wood pulp, which gradually sank to 1650 marks in June, reaching the bottom price of 1200 marks in July. Sales to the United States and France then began, and prices recovered to 2000 marks per ton of dry pulp f.o.b. In 1921 exports, as reported by the union of Finnish Wood Pulp Mills, were as follows:

Country	Dry tons	Wet tons	Boards tons
England	878	1062	8092
U. S. A.	3182	5782	1416
France	9492	4680	—
Belgium	3732	1053	670

A gratifying feature of last year's development of last visit to Helsingfors, Director Hylin of the Lagerloef Trading Co., who acts as general agent of the wood pulp industries is the fact that they have gained a firm footing on the American Markets. During his Finnish Wood Pulp Union, gave a number of details of the American wood pulp Markets Matters of great interest in this country. For example Director Hylin stated that Finnish shipments of mechanical pulp have recently risen to 9000 tons a year. A steady demand for materials is no doubt expected in the United States, although the demand for wood pulp is very uncertain, in view of the productive power of American hydraulic groud wood mills. For Finnish wood pulp, however, we have gradually succeeded in establishing a nearly constant market with steady possibilities in the way of offerings. Moreover imports of wood pulp and newsprint are expected to be duty-free.

The market for cartons, which existed in 1914, was lost during the war. Now we have begun to export cartons, and the Lagerloef firm has marketed about 2000 tons in America. American requiremeents as to the quality of cartoons are more rigorous than they are in European countries, above all the demand is made for a much satisfactory calibration, and at first, therefore, only certain grades found a market. Now, since the mills in Finland have modernized their machinery, they are prepared to supply the right grades, enabling the Lagerloef Trading Co. to make a good market for Finnish cartons in America where they are used for packing and other purposes. A certain amount of difficulty was created for imports by the ad valorem duty of five per cent, and the duty of ten per cent. on the value of the goods in the American markets.

The cellulose industry improved its position in 1921, surpassing the wood pulp industry. Whereas in 1920, the production of cellulose was 121,500 tons, in 1921, output of the mills was 170,726 tons, exported not only to the markets of America and England, but to a variety of new ones. The increase of production was partly due to new sulphite mills. In 1921 the production of pulp was:

Bleached Sulphite	12,500 tons
Easy-bleaching Sulphite	31,000 tons
Strong Sulphite	93,000 tons
Easy-bleaching Sulphate	12,000 tons
Strong Sulphate	22,000 tons

The export figures of the Cellulose Association for 1921 show "the paramount importance" of the American market for their product:—

	Exports	
	Sulphite	Sulphate
America	30,041.7 tons	14,214.5 tons
England	18,078.4 tons	767 tons
France	10,474.7 tons	1,203.9 tons
Belgium	7361. tons	1,908.2 tons

The figures for 1922 have just been supplied by the Bulletin of the Bank of Finland. From January to May exports of papers and newsprint amounted to 588,304,555 Finnish marks as compared with 255,739,804 marks for the same interval in 1921. Exports of wood pulp and cellulose from January to May 1922 amounted to 14,600 tons and 67,324 tons respectively.

Exports of newsprint during this interval of 1922 were 58,730 tons of which the greater portion went to America.

Phenominal Rise in German News Print

The price of German news print has risen 350 times the pre-war figure. In fact quotations are merely nominal as the sky seems to be the only limit for this article. After reaching 28 marks per klio in August the present price is 70 marks "and over".

Containers Made of Wood Pulp

The Kartonnagen-Zeitung describes a simple process of manufacturing containers of wood pulp. Special machinery is employed, but it is stated that the paper machine may be used, from which the pulp is run off into tubes and "iron forms" and impregnated. Containers of this description do not compare very favorably with American or Canadian make, being crude in shape and graceful of design, with no great variety of patterns. On the other hand these containers are very durable and the capable of manifold uses.

German Export Duties Raised

The Minister of Economics has raised the export duties from September 3 on all grades of paper, boards paper goods and newsprint 60 per cent. Such duties are prohibitive. At the leipzig meeting of all the German industrials a vigorous protest was voted unanimously against this increase in export taxes which, it is stated, will have a "ruinous" effect on German Trade and economic restoration.

Wood Pulp Prices In Germany

According to the lates figures published prices have aimost doubled. Quotations f.o.b. consumer's station were: in marks per 100 kilos (220 lb.):

Unbleached No.2	1300	1365	1625	2550
Prime bleached	1425	1490	1750	2700
Prime bleached No. 1	1475	1540	1825	2800
Prime easy-bleaching	1575	1640	1950	2950
Sasy-bleeaching No. 2	1775	1840	2200	3400
Prime bleached, air dry	1850	1915	2300	3550

Pappen-und Holzstoff-Zeitung. September 15.

"How is your soul?" some one asked of Wiberfoce The man replied, "I am so occupied with the cares of the oppressed that I do not have time to consider it."

Technical Section

REVIEW OF RECENT LITERATURE

A.-Properties and Testing of Materials

A-1; A-3. Determination of Pentosans in Plant Materials. EMIL HEUSER, **Paper,** xxviii, No. 4, 22-25; 38-39, (March 30, 1921); No. 8, 28-32, 41, (April 27, 1921). Translation by C. J. West. Pentoses and pentosans, on hydrolysis, are decomposed quantitatively into water and furfural. Pentoses and pentosans are determined by estimating the amount of furfural which they yield on distillation with hydrochloric acid. The various methods proposel for the determination of furfural are examined. Only the gravimetric methods are found to be of value in scientific work; and of these either the phloroglucinol method of Boeddener and Tollens, with correction for methyl furfural (according to Tollens, Ellett, and Ishida), or the acid method of Kerp and Unger, should be used. Perhaps further study will show that this latter method is more advantageous. The volumetric methods are suitable only for the determination of pure furfural, and further investigation is required to decide which of these is the best. The colorimetric methods are suitable only for technical work. Of these, Schwalbe's method appears to be the more suitable one. —A. P. -C. ,

A-1; A-3. Determination of Methyl Pentosans in Plant Materials. EMIL HEUSER. **Paper,** xxviii, No. 9, 26-27, (May 4, 1921). Translation by C. J. West. In the determination of pentosans by precipitation as furfural-phloroglusid, the methyl pentosans act similarly to the pentosans and methylfurfural-phloroglusid is precipitated also. Technically the determination may be omitted in the analysis of plant materials, as the values obtained are small and the methods very unsatisfactory. —A. P. -C.

A-3. Aquatic Plants and Marsh Grasses. CH. CROUD. **Papier,** xxiii, 153-157, (July 1920) . A description of the various aquatic plants and marsh grasses which are to be found in France, together with a discussion of their availability for paper making.
A. P. -C.

A-4; E-5. Production and Characteristics of Mitscherlich Sulphite Pulp. JOHN E. DALEY. **Paper,** xxvi, No. 24, 17, 30, (Aug. 18, 1920). A brief description of the difference between the Mitscherlich and quick cook processes, and of the characteristics of the pulps. The advantages of the Mitscherlich process are a stronger and more uniform pulp and therefore a better paper. Its drawbacks are greater length of time required in cooking, greater investment in digesters and buildings, and greater labor expense in filling and emptying digesters, repairing lead pipes in digesters, etc. —A. P. -C.

A-7; K-5. Specifications Recommended for Lime for Cooking Rags. Pulp and Paper, xviii, 875,876, (Aug. 19. 1920); **Paper,** xxvi, No. 25, 16, 25, (Aug. 25, 1921). Specifications recommended by the U. S. Bureau of Standards covering, definitions, quality, composition, packing, marking, sampling, testing, and retesting. A brief summary is given of the analytical methods recommended. For more complete information on this subject reference should be made to "The Analysis of Silicate and Carbonate Rocks," W. F. Hillebrand, U. S. G. S. Bull. No. 700. (See also **Pulp and Paper,** xviii, 438, A-7, (Apr. 22, 1920).—A. P. -C.

A-12. Determination of the Acidity of Alum Solutions. I. BELLUCCI and F. LUCCHESI. **Gazz. Chim. Ital.,** lxix, 216-241, (July 10, 1919); **Paper,** xxvi, No 25, 17, (Aug. 25, 1920). Translation by A. Papineau-Couture. See this journal, xix, Feb. 17, 1921. A. P. -C.

A-12; K-10. The Rosin Size Industry. R. THINDON. **Papier,** xxiii, 145-146, (July 1920). Recent progress in the chemistry of rosin sizing has shown that the latter must be protected by a film of aluminium hydrate or aluminium resinate and also that all rosins are not equally suitable for the preparation of rosin sizing. This, together with the conditions arising from the war, gave rise to the rosin size industry, which so far has given satisfaction and has most likely come to stay. —A. P. -C.

A-O. Rags and Waste Paper. J. MICOL DE PORTEMONT. **Papier,** xxiii, 147-151, (July 1920). A discussion of the necessity of a more widespread collection of rags and waste paper in France and of their more careful classification, showing that the dependence of France on foreign countries for paper making fibers would be very greatly reduced thereby, especially as regards pulps for the manufacture of news print. The compositions of a large number of furnishes in which waste paper is used are given (taken from Jas. Strachan's "Recovery of Waste Paper"). The classification of waste papers as practised by the "Etablissements Blanchet," Paris, is also given. —A. P. -C.

B.-Forestry

B-2. Factors Controlling the Disribution of Douglas Fir in Semi-Arid Regions of the Northwest. FLOYD W. GAIL. **Ecology,** ii, 281, (Oct. 1921). Low moisture content of the soil is considered the greatest factor in preventing the growth of Douglas fir on southwest slopes. Reduced light under the cover of Douglas fir is the chief factor in causing the disappearance of yellow pine from the north and north-east slopes.
C. L.

B-3. West Organizes to Combat Blister Rust. Timberman, xxiii, 33, (Jan. 1922). Report of the White Pine Blister Rust Conference held at Portland, Oregon Dec. 19 and 20, 1921, to consider ways and means of preventing the disease from reaching the white pine forests of the Inland Empire and Eastern British Columbia and the sugar pine regions of Southern Oregan and California. See also "Facts About White Pine Blister Rust," **Ibid,** p. 35. C. L.

B-3. Slash Disposal in the Yellow Pine Region. JAMES W. GIRARD, Logging engineer. **Timberman,** xxiii, 39, (Feb. 1922). Describes and discusses methods of disposal of logging slash in the yellow pine region of the Western States, from the viewpoint of reducing the fire hazard. A cutover area was examined on the operations of the Polleys Lumber Co. near Roman, Montana. This sale area is on the Flathead Indian Reservation. It was necessary for the swampers to handle a large portion of the brush in the process of swamping, and they were able to pile a large portion of this without any additional expense, in such a manner that a fairly good burn could be accomplished when conditions were such that the fire would not spread over the entire area. "If common sense and judgment are used in burning, very satisfactory results can be accomplished for a cost not to exceed from five to fifteen cents per thousand feet. The burning on practically all of the area in question was done when fire would not run from pile to pile. It is safe to say that at least 85 per cent of the brush has been burned, and 90 per cent of the reproduction and advance growth left undamaged." It is concluded that this method of brush disposal will not increase the cost of logging more than 10 to 20 cents per thousand, over broadcast burning, and will give much better results from a protection point of view. —C. L.

B-3. What Forest Conservation Means to National Prosperity. W. B. GREELEY. **Paper,** xxvi, No. 23 13-15. 28, (Aug. 11, 1920). A discussion of the importance of timber to a nation, and of the terrible inroads made into the forest wealth of the United States, which is using its resources many times as fast as they are being replenished by Nature. "The answer to the forestry problem of the United States is not to use less wood but to grow more—to put our idle acres of burned and logged-off timber land at work growing trees. This is not inherently a difficult thing to do. Three-quarters of it lies in preventing forest fires. But it does require an aggressive national policy of reforestation.—C. L.

B-4. Dry Kilns a Saving to the Industry. H. S NEWINS, Prof. of Forestry, Oregon Agriculture College. **Timberman,** xxiii, 39 (Feb. 1922) A description of the efficient and economical results in drying lumber by the use of modern dry kilns.—C. L

B-6. Topographic Surveys for Logging Operations. J. A. WRIGHT. **Pac. Coast Lumberman,** vi, No. 2, 29, (Feb 1922). —C. L.

B-8. Burning Over Forested Areas for Grazing. Pac. Coast Lumberman, vi, No. 2, 35, (Feb. 1922-. A discussion of the question as to whether the production of timber or the promotion of the grazing industry will represent the highest use to which lands in certain sec tions of Western Canada may be devoted. In some sections, burning operations have been advocated in order to keep down forest reproduction and thus increase the value of the land for purposes of grazing. The conclusion is that absolute protection from fires is in the interest of the grazing industry as well as in that of forestry.—C. L.

B-9. The Purpose and Plan of Forestry Work. C. D. Howe, Dean, Faculty of Forestry, Univ. of Toronto. **Can. Lumberman,** xlii, No. 1, 49, (Jan. 1922). An address delivered before the Foresters' Club, Toronto. Describes the object of forestry, the necessary qualifications of a successful forester, the functions of individual trees, and the inter-relationships which exist between the trees and other plants which comprise a forest community. Effect of soil upon the composition of the forest, and the reaction of the forest upon the soil. We have in Canada about 1,900,000 square miles of soil covered with forest, or over one billion acres. Of this, from two-thirds to three-fourths has been burned over during the last 75 years. Fire protection is the most important problem in forestry policy to-day; in fact it is one of the most important economic problems facing Canada at the present time. Enormous areas of former pineries in Ontario will have to be planted up artificially, if this type of forest is ever to exist again on those areas. "What would it mean to Canada if all our twelve hundred million acres of alsolute forest soil were fully stocked with commercial trees, adequately protected from fire and managed for continuous production? What would the resources from such forests mean in terms of reduced taxation, in furnishing the financial aid in the building of hospitals and libraries? —C. L.

B-9. Annual Meeting of the Canadian Forestry Association, Toronto, Jan. 10, 1922. Can. Lumberman, xlii, No. 2, 51, (Jan. 15, 1922). Brief summary of proceedings, including list of officers elected for the ensuing year. Reference to address of Premier Drury of Ontario, in which the statement is made that three hundred and fifty million feet of pine are cut in the province each year, or one hundred million more than is replaced by natural growth. At this rate in 35 years the virgin forest will be exhausted. The remedy is to grow trees. Mr. Drury stated that plans are under way for the inauguration of an extensive planting policy by the Province, involving the reforestation of ten thousand acres each year. The cost of the program per annun would be about $.00,000, and if the program were carried out, within 50 years the growth would amount to fifty million feet per year more than the present annual cut.—C. L.

B-9. Wanton Waste of Canadian Timber Must Cease FRANK J. D. BARNJUM. **Can Lumberman,** xlii, No 4, 39, (Feb. 15, 1922). Emphasizes the extremely serious situation with regard to pulp wood supplies in Eastern Canada. Heavy damage by spruce budworm and by forest fires. Advocates that the Canadian pulp and paper companies should reduce the cut on their own lands as near one-half as possible; insist on an embargo or export tax of not less than $10 per cord on fee land wood, so as to save for the mills of Canada the large amount of wood that is being shipped out of the country; insist upon more and better fire protection, the burning of all slash, the utilization of every inch of the tree that is cut down; improve present wasteful logging methods, and insist upon reforestation on a large scale. Shows that the situation in the United States is such that Eastern Canada must inevitably be called upon to furnish very large amounts of pulp and paper for the American market. Emphasizes particularly the necessity for an embargo or export duty on privately-owned pulp wood of which over one million cords per year are now being shipped from Canada to the United States. Also **Pulp and Paper,** xx, 59-60, 71, (Jan. 26, 1922).—C. L.

B-9. New Zealand Forest Service, Annual Report for Year Ending March 31, 1921. L. M. ELLIS, Director of Forestry. Forestry agitation in New Zealand dates back to 1874, but with comparatively small actual progress until the recent establishment of the State Forest Service. There is now a definite forest policy, an administrative organization, and the dedication to technical management of forest and woodlands totalling 6,800,000 acres, or 10.3 per cent of the total area of the Dominion. A district organization has been made effective, and experts employed for several lines of work. There are still at least 4,000,000 acres of undedicated Crown and Native forest land which should be added to the State forests, in the interests of hydro-electrical development, irrigation, municipal water supply, regulation of steam flow, and the stabilization of the climatic balance on the lower fertile plains. Unregulated logging and forest fires have already caused enormous damage. The total

(Continued on page 982)

British Trade News

(From Our London Correspondent)

London. Oct. 24, 1922.

The muddle into which the coalition Government, just emerged from office, dragged some of the great English papermaking concerns is reflected in the annual report of Edward Lloyd, Ltd. "Your directors regret", it says, "that they are not in a position to present the balance sheet and profit and loss account for the year ended December 31 last owing to the delay in obtaining a settlement of the company's claim for repayment of Excess Profits Duty." Canadians carefully realise what this means. Here we have a big mill with its finances hing up for close on twelve months by dilatory Government departments, who will not stoop to smooth out the path for shareholders, or keep a company that has braved the elements of war and its subsequent consequences. Yet people will say that England is a "free" country and the "best governed" in the world. It is to be hoped for the sake of industry that the incoming government, no matter what its color may be, will set to work promptly to clear up the misdeeds and the muddling of the last. The report goes on to say that "The face in the value of the stocks of raw material on hand on January, coupled with the reduced production of paper owing to the coal strike in the first half of the year (1921), resulted in a serious loss of the company and it is evident that, even after recovery of the estimated amount of our claim for return of Excess Profits Duty, the accounts will ship a heavy loss for the year. We shall consequently be unable to declare any dividend on the ordinary shares for 1921. The stocks of raw materials we carried at the beginning of the year, though very large, were only sufficient to meet the anticipated demand of our customers at that time, who relied on us to meet their full requirements of paper."

Full Speed Ahead

Edward Lloyd, Ltd., is one of the best trusted firm of paper makers in England would that we had a score like them! That veteran papermaker and chairman Wm. Edward Lloyd, presided at the annual meeting, when the report was read, which further stated: "we are now making a fair profit on a largely — increased production, sufficient to justify us in paying the interim dividend of 1¼ p. c. which has recently been declared on our ordinary shares for the current year. All the machines at Sittingbowne are now running at their fullest capacity, and thanks to the cordial cooperation of our employee's with an even greater efficiency than in pre-war days. We have gone through a period of great difficulty, and I think we can congratulate ourselves on having emerged from it successfully with our resources unimpaired, and with the goodwill of all our customers." Wm. Lloyd thinks that his company can now look forward, with the greatest confidence, to a return to normal conditions and to further expansion in the near future.

It is interesting to note that Wm. Edward Lloyd has completed 50 years of business life and for 32 years he has been head of firm which bears his father's name. The position of the firm today is entirely due to his energy and capabilities. The mill employe's have presented him and Mrs. LLoyd with handsome tokens of their appreciation and admiration.

Pulp Imports

The imports of wood pulp for September were heavy, the following being figures: —

	Sept.	Jan. - Sept.
1922	— 104,482 tons	623,468 tons.
1921	— 63,660 tons	399,912 tons.

Shipments from Canada for the nine months reached 89,959 tons of groundwood, compared with 79,676 tons in 1921. Norway is the only country beating Conada in these shipments, her supplies totaling 204,885 tons. Good sppliees of chemical pulp also reached England from Canada.

In the market there is a general demand for chemical pulps, but groundwood moving slowly. Sellers are optimistic.

Pulp Men Meet

A conference on the wood pulp contract note has just ended. Delegates from Sweden, Norway and Finland travelled to London to discuss and adjust differences with the members of the British Wood Pulp Association and the British Papermakers' Association. Just three days were spent arguing points and a draft of the amended contract note has been submitted to the various associations for final approval before being universally adopted. It was noticeable that amongst the delegates a big firm like Messrs. Becker & Co. Ltd. were not represented. The contract note has been a "bone" of contention ever since it was originated and it remains to be seen now if the Scandinavian, Finish, and British Associations will adopt the new draft.

The foreign visitors were entertained to luncheon by the British Wood Pulp Association. Mr. L. P. Andrews, (President) was in the chair and Mr. Erir Nordberg (the hon.secretary), looked after the comfort of everybody. A few speeches were made and Mr. S. Nicol, who presided over the conference of delegates remarked that new countries of supply, new conditions, and new circumstances had arisens ince 1908 to cause a new contract Note being drafted. In the past, were acceptance was sufficient, but now, owing to developments, it was essential to have a clear definition of conditions without any distrust on the part of the purchaser, or seller. What might be accomplished, as a result of the conference, might not be ideal, but at all events with the keeps of shippers, buyers and sellers, he believed they were on the road to success.

Mr. L. P. Andrews, replying to the toast of "The President," said when he entered the wood pulp trade in 1883 there was not the cordial feeling in it that existed today. He valued the close connection with the Scandinavians, there being a feeling that they were, more or less, of the same race.

Mr. A. W. Foster BA., (as Secty) replied for the British Papermakers' Association, and advocated a round table conference alaways on such subjects as the contract Note. The idea of the conference was to reach a mutual settlement of all their difficulties and he hoped that object had been reached.

British Exports

The export trade figures are encouraging and over 500 tons above the figures for this time last year. The imports have nearly doubled and some fine shipments of packing and wrapping papers here reached England from Canada — her trade in this respect being seven times greater than it was in 1921. There is also a big jump in newsprint from 260¾ tons in 1921 to 4,630½ tons for the period January — September this year. This is cheering and shows there is a good market for Canadian products — no matter what other people say.

One sanatorium is giving its patients a half hour's flight in an airplane each day as a treatment for mental depression. (That is a good way to raise one's spirits.)

PULP AND PAPER NEWS

Word from Kapuskasing, Ont., indicates that the Spruce Falls Company, Limited, are making good progress in the installation of their 150 inch pulp drying machine, which will have a capacity of 100 tons a day. The sulphite mill is well on the way to completion and this includes four digestors, blow pits, necessary screens and acid plant. December 1st is the date set for the completion of the plant and the commencement of operations. Work is going forward rapidly on the final details of construction and work in the bush on the winter's cut has been in progress for some time. About forty new dwellings for employees, which is part of the company's housing scheme, are taking shape.

Progress reports on the new mill of the Timiskaming Pulp and Paper Company indicate that everything is working smoothly and that the objective of 40 tons of groundwood pulp as the daily output is being attained. The mill cost $1,000,000 to build and the groundwood output is being shipped to Chicago, Kalamazoo and New York State points.

Notices have been sent out by the Wilkinson Paper Company, Limited, announcing their removal to 71 Wellington Street, W., where the firm has the entire ground floor of 12,000 square feet as a warehouse, with a commodious business office.

Fred. L. Ratcliffe, head of the Ratcliffe Paper Company, Limited, York Street, Toronto, is spending a couple of weeks at Atlantic City.

The Howard Smith Paper Company, through paper merchants in Toronto and elsewhere, are sending out to the printing trade a series of art covers under the titles "Dignity," "Popularity," "Character" and "Stability". The covers, which are artistically designed and printed, enclose samples of the firm's well-known brands of bonds and writings such as Chaldean Vellum, Krypton Parchment, Bell-Fast Bond and Royal Record. The series constitute a classy bit of advertising which will be valued by printers and jobbers for their art work as well as their usefulness.

C. H. Featherstonhaugh, manager of J. C. Wilson, Limited, Montreal, was a business visitor in Toronto during the past week.

George Carruthers of the Interlake Tissue Mills, and H. F. E. Kent, of the Kinleith Mills, have returned to Toronto after attending meetings of the Councils of the Technical Section and of the Canadian Pulp and Paper Association in Montreal.

A. C. Hunt, manager of the John Martin Paper Company, Winnipeg, is in Ontario visiting friends of earlier days in the province.

As a result of the disaster in Northern Ontario on Oct. 4th, the Mayor of New Liskeard has applied to the provincial forestry department for assistance in clearing the bush surrounding New Liskeard. A fire-guard area will likely be established around the district possibly by next spring.

Fred. Halls, of the Fred Halls Paper Company, Adelaide Street, Toronto, has gone on a duck shooting expedition to the north country.

Charles E. Whitten, Secretary-Treasurer of the Canada Paper Board Company, Montreal, was a business visitor in Toronto during the past few days.

T. J. Allan, Vice-President of Paper Sales, Limited, King Street, Toronto, was the winner of the President's cup in the handicap contests recently played off at the Glen Stuart Golf Course, Toronto.

P. B. Wheeler, of the Frankling Paper Company, Holyoke, Mass., was a caller at the office of Paper Sales, Limited, Toronto, last week.

Col. T. Gibson, of the Spanish River Pulp and Paper Mills, Limited, and Col. Jones, will be the speakers at a reunion of Great War veterans at Sault Ste. Marie on Armistice Day, Nov. 11.

Desiring to obtain practical and expert information concerning the use the streams and rivers of Ontario in the timber, pulpwood and power industries of the province, a legislative committee of the Ontario Government, headed by Hon. Beniah Bowman, Minister of Lands and Forests, held a hearing in Port Arthur on Nov. 3rd. The meeting was attended by directing officials of virtually every pulp mill, power, pulpwood and timber company operating in the northern section of the province. Representatives of two companies suggested that the Government expend about $20,000 in an effort to conserve water which wastes at a certain season of the year, and have an official on the spot to regulate the flow to the best advantage of all concerned. The minister and his party visited the local pulp and lumber plants and will visit other plants in the district.

Mr. G. M. McKee and his family have taken up their residence for the winter at the Ritz-Carlton Hotel, Montreal.

The annual meeting of the Canadian Pulp and Paper Association will be held on January 26th at the Ritz-Carlton Hotel, Montreal. The technical Woodlands and other sections will meet at the Ritz-Carlton Hotel on January 24th and 25th. The council of the Association have appointed Mr. G. M. McKee, Mr. H. F. E. Kent and Mr. Edward Beck, the secretary, as a committee to make all arrangements.

The Council of the Canadian Pulp and Paper Association at a meeting held last week, passed a resolution expressing regret at the death of Mr. Alex. MacLaurin, of the St. Maurice Paper Company, Limited. The resolution also conveyed a message of sympathy to the family.

Mr. E. L. McCormack has resigned the position of superintendent of the newsprint mill of the St. Maurice Paper Company, Limited, to become superintendent of the St. Lawrence Paper Mills, Limited, Three Rivers. He entered on his duties on November 1st. Mr. McCormack is succeeded by Mr. George Dymond, of the Finch Pryun Mills, Glens Falls, N.Y. A farewell dinner was tendered Mr. McCormack on October 30 at the Company's bungalow, Wayagamack Island. This was attended by about 100 persons, including visitors from Montreal and Three Rivers. Mr. McCormack, who has been with the St. Maurice Paper Company since the mill started, was presented with a silver tea service subscribed for by the employees, together with a fine wrist watch (price $2), the watch being enclosed in a very large parcel and a multitude of wrappings. Mr. T. A. Wark, the general superintendent, presided. Several speeches were made, expressive of the good wishes of all for Mr. McCormack's success in his new position, with allusions to his long connection with the St. Maurice Paper Company.

forest revenue for the year was 45,162 pounds, of which 19,697 pounds is credited to State Forest Revenue, and 25,465 to Crown Land Timber Revenue. The State forest expenditures were 79,551 pounds. Of this expenditure 80 per cent was for afforestation. There are large areas of forest lands under the control of interests other than those whose whose objective is conservation and rational use. During the past generation, 2,500,000 acres of virgin forest has been rendered a barren waste by fires; over 50,000 acres were burned over during the fiscal year. During the year 2, 877, 954 trees were planted on 1,381 acres, bringing the total area reforested from 1896 to 1921 up to 38,462 acres. Over 456,000 seedlings and 240 pounds of tree seeds were disposed of during the year to farmers and soldier settlers. A forest products laboratory is needed to study the qualities of the native woods. Sylvicultural research has been inaugurated to form a basis for future forest management. The establishment of a school of forestry is strongly recommended. The New Zealand Forest Service has made an excellent start towards the adoption of a rational forest policy and it is to be hoped that its future progross will be both steady and consistent.—C. L.

C.-Preparation of Wood

C-4. Volumetric Measurements of Pulp Wood. Chem. Met. En., xxv, 704, (Oct. 12, 1921). A brief description of the apparatus used at the Forest Products Laboratory (Madison, Wis.) for determining the volume of sticks of pulpwood by immersion in water—A P. -C.

E.-Acid Pulp Processes and Equipment

E-2 P-Cymene as a Solvent A. S. WHEELER. **J. Am. Chem. Soc.**, xlii, 1842-1846, (1920). The price of **p**-cymene has decreased so much since it has been discovered to be the main constituent of **sulphite turpentine** that it should be placed on the regular list of solvents. It is of importance as a solvent because it is a hydrocarbon of high boiling point (176.5 deg. C.) and, where possible, should be preferred to such colored solvents as aniline or nitro-benzene or an evil smelling one like pyridine. In its purification the sulphur dioxide is best removed by drawing air through it (10 hours for 5 gallons); it is then distilled with superheated steam, the vapors being passed through 30 per cent sodium hydroxide solution before they are admitted to the condenser, and the distillate is shaken with 5 per cent sodium hydroxide and finally distilled over sodium. The solubilities of a large number of organic compounds in **p**-cymene are given. —A. P. -C.

E-2. The Effect of Sulphite Cellulose Waste Liquor on the Sewage of Konigsberg. F. SCHUTZ. **Z. H. yg. Infections kronkheiten**, lxxxvii, 185-241; **Chem. Abs.**, xv, 1179, (April 20, 1921). Sulphite waste liquor mixed with Konigsberg sewage in the ratio of 1 to 13 increased the oxygen consumption from 580 to 4550 mg. per liter, and caused an intolerable nuisance from odors. Dilution with 3,000 volumes of fresh water was required to obtain stability.—A. P. -C.

E-2. The Yield of Sulphite Coal. R. W. STREHLENERT. **Svensk Pappers-Tidning**, xxiii, 459-460, (1920); **Chem. Abs.**, xv, 1991, (June 20, 1921). The yield of 200 kilos of dry fuel per ton of pulp as previously announced is corrected. By using both the precipitation method and the evaporation method the yield is raised to 600-680 kilos per ton of pulp. — A. P. -C.

E-4. Automatic Control of Paper Mill Processes. The Crandon Acid System. Paper, xxvi, No. 23, 24, (Aug. 11, 1920). A brief description of the advantages of the Crandon Acid System.—A. P. -C.

G.-Treatment of Pulp

G-4. Construction and Operation of an Aerial Pulp Conveyor. Paper, xxvi, No. 23, 20, 32, (Aug. 11, 1920). Description of the construction and operation of the aerial pulp conveyor in use at the mill at West Linn, Ore., of the Crown Willamette Paper Co. —A. P. -C.

H.-Bleaching

H-5. Methods of Bleaching Paper Making Fibers. FRANK. **Papeterie**, xlii, 544-548, (June 25, 1920); **Paper**, xxvi, No. 24, 11-2, (Aug. 18, 1920). Translation by Paul Bartholow. See this journal, xix, 198, Feb. 17, 1921. —A. P. -C.

K.-Paper Making and Equipment

K-14. Developments in Slitting Machinery. Paper, xxvi, No. 24, 28, 30, (Aug. 18, 1920). The principle of rewinders is very briefly described and attention is drawn to the latest type of rewinder of the Cameron Machine Co., Brooklyn, N. Y.—A. P. -C.

K-18. Raw Materials for Fiber Board. GEO R. BROWDER, Gen. Mgr. of The Container Club, **Paper**, xxvi, No. 26, 13-14, (Sept. 1, 1920). According to an investigation by the U. S. Forest Service (Circular 177, May 15, 1911) fiber board is made principally of one or more of four materials. Of the total material reported in the course of the investigation 57 per cent was chips (old papers, low grade or refuse materials from pulp mills, screenings, and waste of other kinds repulped and used again), 22 per cent straw (ordinary farm straw), 16 per cent wood pulp (partly low-grade short-fibered pulp mixed with other cheap pulp, to which is added a small quantity of long-fibered wood pulp to give the required strength,) 5 per cent jute (old rope and bagging). The amount of saving of wood and of freight car space resulting from the use of fiber board containers is discussed.—A. P. C.

K-18. Pasteboard. W. FUCHS. **Deut. Faber-Ztg.**, lvii, 27-28, (1921); **Chem. Abs.**, xv, 1074, (April 10, 1921). The resistance of pasteboard depends upon the thickness and upon the presence of compounds with which the pasteboard is impregnated. For the latter purpose copper, aluminum, zinc, and other salts are dissolved in the paste, china clay is added in the solid form, and lead sulphate is formed in the paste by the reaction of soluble lead salts and sulphates. For white pasteboard without lead, the following are recommended: (1)China clay 300 g., water 300, copper sulphate 100, cupric nitrate 50, gum arabic solution (1:1) 350. (2) China clay 400, verdigris 125, gum arabic 175, copper sulphate 175, alum 25; after making this up add potassium dichromate 12 and turpentine 5. (3) China clay 1000, verdigris 300, gum arabic 500, copper sulphate (50 per cent solution) 500, alum 250. In making up (2) and (3) the china clay, verdigris, and gum arabic should be separately treated with water the day before, the verdigris in water acidified with acetic acid. Copper sulphate and alum are dissolved in the hot gum arabic solution. The china clay and verdigris are kneaded together, the solutions are added, the mass is cooled and passed through a sieve. For white or yellow board containing lead use (1) China clay 200, water 200, copper sulphate 100, lead nitrate 100, lead sulphate (50 per cent paste) 200, gum arabic solution (1:1) 200, or (2) China clay 60, verdigris 30, alum 20, copper sulphate 20, lead nitrate 50, lead acetate 40, gum arabic solution (1:1) 25. This should be compounded like Nos. 2 and 3 above, then the lead nitrate and lastly the lead acetate added. Recipes with detailed directions are given for the preparation of yellow, orange, green, olive, red and blue resists.—A. P. -C.

K-0. The Use of Ball Bearings in Paper Machinery. Paper, xxvi, No. 25, 11-13, (Aug. 25, 1920). The general advantages of ball bearings are lowered friction and consequently reduced power charges, increased accuracy of operation and consequent improvement in the quality of the product, reduction of maintenance charges. The particular advantages to be derived from using them for barkers, grinders, wet machines jordans, fourdriniers, cylinder machines press rolls dryer rolls, and calenders, are reviewed.—A. P. -C.

L.-Products of Cellulose and Paper

L-7. Manufacture of Paper Threads. J. C. VARLOT **Papeterie**, xlii, 2-15, (Jan. 10, 1920); **Paper, 15-18, 29**, (Sept. 1, 1920). Translation by A. Papineau-Couture. See **Pulp and Paper**, xviii, 471, L-7, April 29, 1920. A. P. -C.

M.-General Equipment

M-10. Systematic Fire Prevention. Paper, xxvi, No. 26, 25, (Sept. 1, 1920). A description of the organization at the Kimberly-Clark and Neenah Paper Companies mills at Appleton, Neenah, Kimberly, and Niagara, Wis., for efficient fire-fighting.—A. P. -C.

M-12. Value of Oil Filters Tested. The Richardson Filtering System. Paper, xxvi, No. 26, 22-23, (Sept. 1, 1920). Results of tests carried out at Cornell University, on oil taken from a Richardson Central Oiling and Filtering System, to determine what changes take place in oil that is repeatedly used for lubrication, showed that for all practical purposes properly filtered oil is as good a lubricant as new oil under all operating conditions. The filtering device of the Richardson System is described in some detail.

P.-Safety and Welfare Work

P-0. Safety First Cuts Accidents. Paper, xxvi, No. 25, 14, (Aug. 25, 1920). A brief description of Safety First methods which are successfully employed in the wood yard, wood room, pulp mill, rag room, beater room, calender room, and shipping room.—A. P. -C.

R.-General

R-8. Standardized Export Terms for Use by All Industries. Paper, xxvi, No. 25, 10, 24-25, (Aug. 25, 1920). A detailed explanation of the meaning of the terms **FOB. ,FAS., C&F., CIF., LCL.** and of the way they should be used.—A. P. -C.

R-5. The Consumption and Manufacture of Mechanical and Chemical Wood Pulp in France. AUGUSTE BICLET. **Papier**, xxiv, 271-274, (June 1921); **Monit. Papeterie Française**, lii, 427-430, (July 15, 1921). An analysis of the requirments of the French paper industry. The manufacture in France of the 200,000 tons of groundwood which are at present imported annually would require a capital of 80 to 90 million francs if the power were bought from central power stations, 140 to 150 million if steam driven grinders were used, and 200 to 210 million if the ground wood mills installed their own water power stations. For the manufacture in France of the 200,000 tons of chemical pulp which are imported, a capital of about 300 to 350 million francs would be required. It is generally considered by capitalists that there are more profitable industries than the pulp industries, and therefore such large sums are not readily forthcoming. — A.P.-C.

R-11. Training Engineering Students in Industrial Management. BRUCE W. BENEDICT, Mgr. of Shop Laboratories, Univ. of Ill. **Paper**, xxvii, No. 9, 13-16, (Nov. 3, 1920). Details of a pioneer experiment in the instruction of industrial management to engineering students, including the scope of the engineering field and the specifications for such experimental development. — A.P.-C.

R-11. Recent Advances in Pulp and Paper. C. J. WEST . **J. Ind. Eng. Chem.**, xiv, 850-860, (Sept. 1922). A brief review of recent progress, more particularly from a chemical standpoint.—A. P. -C.

R-12. Figuring an Estimated Cost. Paper. xxvii, No. 9, 16-17, 46, (Nov. 3, 1920). A description of the procedure adopted at the Chemical Paper Mfg. Co., Holyoke, Mass., for estimating cost and selling price of paper. — A.P.-C.

R-12. Correlation of Mill Data. W. B. VAN. ARSDEL. **Paper Ind.**, iv, 645-650, (Aug. 1922). A discussion of the application to the interpretation of mill reports of "correlation coefficients" and "regression coefficients" as used in statistical calculations. The character of the arithmetical work required and the type of information resulting is shown by an example taken from sulphite mill data involving as viarables the copper number of bleached pulp, per cent free SO_2 in the cooking acid, time of cooking and temperature of the mill water supply.—A. P. -C.

R-12. Importance of Accurate Mill Reports. J. A. REILLY, American Writing Co., **Paper Trade J.**, lxxiv, No. 23, 39-41, (June 8, 1922); **Paper Ind.**, iv, 427, 429, 431, 433, (June 1922); xxx, No. 16, 7-10, (June 21, 1922). A discussion showing how accurate mill reports can be used by the cost department to show there is waste in the rag room, beater room, machine room, or boiler plant, or to show when it would be advisable to replace old equipment by new.-.A P. -C.

R-12. An Executive Viewpoint of Co-operation Between Superintendents and Cost Departments. G. A. GALLIVER. **Paper Mill**, xlv, No. 21, 2, 6, (June 23, 1922); **Paper Trade J.** lxxiv, No. 23, 54-58, (June 8, 1922); **Paper**, xxx, No. 14, 11-13, (June 7, 1922); **Paper Ind.**, iv, 403,405, (June 1922). A plea for thorough co-operation between superintendents and cost accountants.—A. P. -C.

R-12. Co-operation Between Superintendents and Cost Accountants. JOSEPH SLATER. **Paper**, xxx, No. 14, 14, 18,(June 7 1922); **Paper Mill**, No. 22, 38, 40, (June 10, 1922). **Paper Ind.**, iv, 415, 417, 419 (June 1922). A discussion of the value of the cost department in locating waste and enabling the superintendent to eliminate it.—A. P. -C.

R-12. Mill Costs from a Technical Man's Standpoint W. G. MacNAUGHTON. **Paper**, xxx, No. 14, 29-31, (June 7, 1922); **Paper Trade J.**, lxxiv, No. 23, 87-89, (June 8, 1922); **Paper Ind.**, iv. 419,421, (June 1922). A plea for greater accuracy in the measurements of quantities of materials used and in keeping track of inventories. The author takes a typical pulp and paper mill, shows how the several departments should be kept separate from a cost accounting viewpoint, and outlines the items which should be included in the cost records of the various departments.—A. P. -C.

R-12. The Cost System and the Superintendent. F. C. BOYCE. **Paper Mill**, xlv, No. 21, 32, 64, (June 3, 1922); **Paper Trade J.**, lxxiv, No. 23, 44, (June 8, 1922); **Paper**, xxx, No. 19, 11-12, (July 12, 1922). A plea for co-operation between the manager, superintendent and men to produce best results and lower costs.—A. P. -C.

UNITED STATES NOTES

Captain Erikssen, of the Finnish steamship Gautoise, which arrived in Philadelphia last week from Buenos Ayres, has been empowered by the Finnish government to open negotiations with the United States Shipping Board for the transportation to the United States of 100,000 tons of newsprint paper. The production of newsprint in Finland has been undertaken on a large scale recently, and new markets are being developed. The Gautoise is the first Finnish steamship to enter any United States port.

A performance for the benefit of those made homeless by recent forset fires in western and northern Ontario will be given in the Ritz-Carlton hotel, New York City, Sunday evening, November 12. "Hearts Aflame," a modern picture of life in the timberlands will be shown. Members of the Canadian Club of New York are cooperating in the benefit with Mr. Albert Oliver, president of the club. Dr. Malcolm McNevin and Miss Evelyn McNevin will sing.

A special meeting has been arranged by the American Pulp and Paper Mill Superintendents' Association for November 25 at the Congress Hotel, Chicago, for the purpose of organizing a box board division of the Association. Invitations have been sent out to mills in the Middle West manufacturing box board, wrapping, container board and other allied lines.

A new issue of $5,000,000 twenty year first mortgage sinking fund 6½ per cent. gold bonds, series "A" of the Power Corporation of New York is being offered by E. H. Rollins and Sons, New York, and F. L. Carlisle and Co., Inc. The organization of this new big hydraulic power concern by interests identified with the Northern New York Utilities, Inc., and the Hanna and St. Regis Paper Corporations, was reported in the *Pulp and Paper Magazine* last week. The bonds are dated November 1, 1922 and are due November 1, 1942. They are redeemable as a whole on 60 days' notice at 110 and interest, less ½ per cent, for each year of expired term, or for sinking fund at 105 interest. The corporation has granted a first call on the output of the power, when developed, to the Northern New York Utilities, Inc.

Stockholders of the Great Northern Paper Company, meeting in Millinocket, Me., last Friday, approved an increase in the authorized stock of the corporation from $8,300,000 to $25,000,000.

A petition in bankruptcy was filed last week in New York City against the Caldwell Paper Company, Inc., of 244 Lafayette Street, New York.

The old Jefferson mill at Morristown, N. J., has been purchased from the estate of James A. Muir by Franklin W. Muir. The business of manufacturing specialty paper boards that was carried on by the late Mr. Muir will be continued by the new owner.

Charles B. Foster, who was identified with the sales department of the American Writing Paper Company during the last five years, has resigned as assistant sales manager for that concern to take charge of the New England sales territory for the Pejopscot Paper Company.

Dr. Durgin, of the Simplified Practice Division of the Department of Commerce, announces that his work on special investigations is being assisted by Samuel E. M. Crocker, of Crocket, Burbank and Co., paper manufacturers. Mr. Crocker is carrying on an investigation of various kinds of containers. It is likely that his work will lead up to conferences to be held in Washington and elsewhere.

Work is in progress at a location in Philadelphia on the Belt line of the Philadelphia and Reading Railroad razing old buildings and structures to make available a site for the erection of a large new warehouse and factory for the Manufacturer's Paper Company. The plot has an area of about 30,000 square feet and it is to have a building of six stories in height to accommodate the manufacturing, stock storage, shipping and executive departments of the firm. In the building, which is to be of modern concrete, fireproof construction, there will be special conveniences for prompt handling of stocks, including not only elevators, but a series of novel chutes for expeditious transfer of stock. Upon completion and occupancy of the new structure, the firm will amplify all its present departments and will engage extensively in the distribution of fine papers, past business having been confined to coarse papers, the manufacture of small roll products, including die-wiping papers and a varied line of specialties.

The belief is held in wall paper manufacturing circles that the vogues of stipple paint is over. While sales of the paper have not increased as much as expected as a result of the increased building, manufacturers say that orders are now better. The people who led in the stipple paint craze, they add, are now coming back to high-grade paper patterns, including tapestries and indefinite figure designs. While the stipple vogues was at its height the manufacturers brought out stipple tone paper which gave the effect of paint. Two years ago, one manufacturer declares, he sold about 2,000 rolls of a color in this effect a month, whereas now this demand has dwindled to about 400 rolls of a color monthly. This is conclusive proof, he said, of the falling off in the stipple vogue.

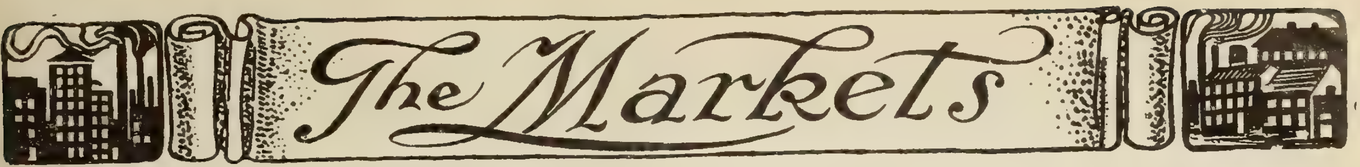
The new Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association will hold its first meeting November 18 at the Hotel Nonotuck, Holyoke. An attractive program for the meeting has been arranged and a large attendance is expected.

P. G. Wright, paper expert for the Tariff Commission, has resigned as head of the Commission's paper division, to become associated with the Institute of Research, which is affiliated with the Carnegie Institution. This leaves the place as expert in charge of the paper division, which has become one of the distinctive parts of the Tariff Commission's new organization.

The Phoenix Paper Company, at Battenville, New York has come into control of a group of Utica capitalists who have acquired the plant and property by purchase from William R. Nobbie, a former Assemblyman from Washington County. A. M. Wilcox of Glens Falls, N.Y. has associated himself with the new concern and has been named manager of the plant under the reorganization.

The annual convention of the Container Club will be held at the Baltimore Hotel, New York City, November 21 and 22. The two days just preceeding these dates have been decided upon by the Bureau of Envelope Manufacturers of America as the time for its annual meeting in New York this year.

Flattery is the art of scratching others where they itch.



The Markets

CANADIAN TRADE CONDITIONS

Montreal, November 7. — The good demand, noted in our last report, continues so far as local paper jobbers are concerned. This applies in almost every line. The condition is due to a gradual improvement in general trade, partly reflected from the better times across the border. According to Mr. R. W. Babson, who spoke to a large gathering of business men here last week, all the signs point to a period of prosperity, which is now commencing, but which will not reach its height until 1924. A well-known figure in the Montreal pulp trade, who has made a study of statistics, prices and the general trend of commerce, prophecies a period of good trade in pulp and paper for two years. Our manufacturers are apparently of the opinion that the demand will broaden, if one is to judge by the additional equipment which is being put in. The general feeling is one of optimism, tempered with the idea of a steady business at prices which will not be pushed so high that consumption will be discouraged.

The advance in price has not checked the demand for newsprint; it has if anything stimulated it. Evidence shows that the consumption next year is likely to exceed all records; the publishers are competing for circulation, and are putting out larger editions all over the United States. The activity in the newsprint section may be guaged from the fact that one Quebec mill has offers of tonnage far in excess of the capacity, and that efforts to place orders for 16,000 to 20,000 tons in Montreal proved unsuccessful. The demand for Canadian newsprint is a tribute to the quality of our production. It looks indeed as if the additional tonnage which will come on to the market next year will be readily absorbed.

In other lines, book papers are in steady request; the orders for tissues and toilets are coming in very freely and wrappings are selling well. Boards are still active, a little easing off in some directions, however is reported. The mills have a very good run of business, although they have had to face a steady rising market for their raw materials, which is now showing a tedency to drop back.

The pulp market is still very firm. The call for groundwood is as insistent as ever, and producers can sell all the wood they can manufacture. The price has again moved upwards. Bleached sulphite continues to find a very ready market, with more buyers than the mills can satisfy. Kraft pulp is also in a very firm position. In fact in almost every line of pulp, the demand is excellent, with prices on a strong basis.

There is still a call for men for lumber camps. The pulp and paper companies will cut very substantial quantities this year, although the cost will be higher than was at first anticiuated. The heavy production of the newsprint mills in particular has made substantial inroads into the wood piles, and most of the companies find it essential to replenish their stocks. Concerns which have also manufactured some commercial lumber are now devoting their logging operations entirely to pulp wood—it is more remunerative, considered in the light of raw material, for their mills.

Toronto Market News

There is a fair measure of activity in most lines of paper products in Ontario and although in some cases the market is somewhat spotty, a fair amount of business is passing, both for the manufacturers and the paper merchants. Information gleaned this week from mill representatives in Ontario indicated that practically all the plants were running pretty much to capacity, and in the case of book, tissue and board mills, operations are being conducted to the limit, with a fair amount of orders booked ahead. Paper merchants say that October was a good month for sales, although at the moment business is rather quiet. Improvement, however, is looked for any day and the general outlook for fall trade is considered satisfactory. Paper box manufacturing plants in Toronto are all busy and are making fairly large requisitions for board from the mills. Manufacturing stationery houses have entered upon a busy fall and report good demand for blank books about all the trade would stand. "It is true," he said, "that operating costs have been materially reduced in the interval, but it is evident, notwithstanding, that profits will stand on a lower plane for some time to come. It would appear, therefore, that an average elevation of 30 to 40 points in the market position of the various paper stocks during the year, and this advancement, due in part to anticipation not likely to be immediately realized of $80 newsprint, had fairly well discounted the prospective improvement in the trade as a whole over a period of months at least."

PULP. — Pulp prices remain firm with a marked shortage of ground wood pulp which paper manufacturers say is very hard to get. This is mainly due to the low water occasioned by a dry summer. It is stated that the E. B. Eddy Company, for instance, has only two stones running out of fifteen. Other contributing causes are the fact that news mills are using ground wood extensively, and the unusually high prices prevailing for old paper. Ground wood is now quoted at from $33 to $40. There is a good demand for all lines of pulp and the market generally is firm. Bleached sulphite is selling at around $100 f. o. b. shipping point, and natural sulphite at from $60 to $75. Sulphate is quoted at $60 to $62.

TISSUES AND TOILETS. — Manufacturers report that business is satisfactory as far as volume is concerned, but operations are being carried on a narrow margin of profit owing to the rising cost of raw materials. No. 2 manilla, 20 x 30 is quoted at 85c.; 24 x 36 at $1.15; Nat. white, 20 x 30, 95c.; 24 x 36, $1.35; No. 1 prime white, 20 x 30, $1.25; 24 x 36, $1.75; white sulphite, 20 x 30, $1.10; 24 x 36, $1.55. Towels Interfolding, $7.50; rolls, $13.75, less 22 per cent.

WRAPPINGS. — The wrapping paper trade is keeping up well, there having been an unusually satisfactory volume of business during October. The following quotations prevail: No. 1 Kraft, C-L 8c.; jobbers 8¼c.; colored kraft, (green) C-L, 8.35c. per 100; colored (blue, mauve, red), C-L, 9½c; B. manilla, jobbers, 5¾c; No. 1 manilla, 6¾; Fibre, 6¾c; T. manilla, 5½c.

PAPER BAGS. — Light manilla, less 62½, 7½, 5 per cent in 100 M lots; heavy manilla, less 60 per cent; light kraft, less 60-7½ per cent, heavy kraft, less 50-10 per cent, white bond, less 17½-10 per cent.

BOOK PAPER. — Book paper mills are all busy and most of them are running at capacity. Stocks in the hands of the distributors are getting low and they are now coming into the market. Most of the requisitions now are for hurry up delivery and if this condition continues it is predicted that some consumers will find themselves in an awkward position as regards supplies. The looked-for increase in price has not yet materialized but it is expected that various lines of book paper will shortly be on the uptrend in common with other paper items.

TWINE. — There is a fair demand for most lines of twine and during the past week one price increase as registered. Cotton twine took a jump of 4 cents per pound and is now quoted at 46 cents per pound. On the other hand Marlin twine dropped a cent a pound and is now quoted at 20 cents for standard and 21 cents for fine.

RAG AND PAPER STOCKS. — The market is holding up well on all grades of new cottons, although old cottons are a little dull. The bagging market is somewhat slow but there is an excellent demand for roofing stock. In the paper stock department No. 1 hard white shavings are quoted at $4.00; No. 1 white shavings, $3.75; heavy books and magazines, $2.25; ledgers and writings, $2.50; No. 1 kraft, $2.50; newspapers $1.50; No. 1 mixed papers, $1.20; No. 1 miscellaneous, $1.15; No. 2 miscellaneous, $1.15. Cotton rags, No. 1 white, 4½; thirds and blues, (repacked), $2.15; roofing rags, $1.25. New cotton cuttings, No. 1 white short cuttings, $10.75; fancy shirt cuttings, $5.50; canton flannels bleached, $9.00; white lawns, $7.50; blue overall cuttings, $5.50. Ropes and bagging, No. 2 manilla rope, $6.10; mixed strings, $1.10.

NEW YORK MARKETS

New York November 4. — (Special Correspondence)— The Federal Trade Commission's report on the paper industry of the United States for September shows that production of paper decreased slightly during that month as compared with the preceding month. A total of 623,088 net tons of paper of all kinds was produced by domestic mills in September, which was some 12,000 tons less than the output in August, yet September production was of greater tonnage than in any month thus far this year with the single exception of August. Moreover, the report shows that paper manufacturing operations in this country in September were far above an average, the average monthly output of paper based on reports covering the past five years being 504,175 net tons.

Another highly encouraging feature of the report is that mill stocks of paper declined considerably during September, dropping from 264,480 net tons of all kinds of paper at the outset of that month to 249,516 tons at the end of September, thus indicating that manufacturers shipped out all of their current production as well as a part of their surplus holdings of paper.

All reports continue to tell of a firm paper market. Business, however, is being badly hampered by existing railroad conditions. Congestion on the railroads is very severe; so bad is it, that most roads are maintaining strict embargoes on freight shipments to numerous points, thus interfering with the natural flow of merchandise over the country. Paper mills are understood to be particularly hard hit, one of the reasons for this being that both finished paper and paper board as well as all the raw materials entering into the manufacture of paper are of bulky character. Mills in numerous cases are said to be unable to ship out their product excepting in piecemeal fashion; neither are they able to get needed supplies of raw material, and the obvious result is that manufacturing operations are being necessarily curtailed. Paper jobbers in New York tell of experiencing all sorts of trouble and delay in receiving shipments from mills; paper stock dealers report that they are unable to ship stock to some mills at all and only in limited amounts to others, and it stands to reason such conditions are hurting general business in paper.

One of the interesting features that has recently developed in the paper trade is the situation existing in bogus wrapping. Demand for this kind of paper is keen—keen because there is practically no supply in this market at the present time. Those mills which in times when business is not so active produce bogus paper are today running on other grades, with the result that it is stated only two or three mills in the eastern part of the United States are producing bogus paper at present. These mills are small ones and their product is not sufficient to supply the demand, and prices have been run up from below 2 cents a pound to about 3.75 cents a pound f.o.b. mills. This kind of paper is made of old No. 1 mixed waste paper, and one of the reasons for the sharp rise in prices is the big jump in cost of old mixed paper, though demand and supply has been the main cause of the appreciation of values of this grade of paper.

Wrapping papers generally are in splendid demand. A jobber stated today that he had been advised by two of the largest wrapping mills in the country that they could not book orders for shipment within less than five weeks hence, which means, in other words, that these manufacturers have all the business they can accommodate for the next five weeks. The price of No. 1 domestic kraft wrapping paper is firm at 7 cents a pound, and No. 2 grade is quoted at 6.50 cents.

Book papers are showing constantly increasing activity. Demand is slowly but surely expanding, and a majority of mills have orders enough to keep them occupied for some time. Machine finished book is commonly quoted at 7 cents per pound f.o.b. New York though some of the eastern mills near to New York are reported taking orders at a little under this price basis.

Tissues are firm, and latest developments in this division of the market infer that an advance in prices is pending. Around 85 cents a ream is the current quotation on No. 1 white tissue, with No. 2 white and No. 1 manila quoted at about 10 cents a ream less. There is a good steady demand for tissue which should continue until at least the pre-Christmas holiday season is over.

Business in box boards is good. Notwithstanding some reports to the effect that board demand has sagged to some extent, one of the largest board distributing concerns in New York today stated that the month just passed was the biggest in its history, more board having been handled and sold than even during the boom period in 1920. Board quotations are maintained at about $60 a ton for plain chip f.o.b. New York, and $62.50 to $65 for filled news.

GROUND WOOD. — Strength, with a capital "S," is the outstanding characteristic of the mechanical pulp market. Demand for this commodity shows no let up, and proof is not wanting that buyers in at least some cases are not locating all the supply they would like to have. The Federal Trade Commission's report on the wood pulp industry for September divulges just what a strong statistical position ground wood is enjoying at present. For example, the report shows that between the dates of August 1, 1922, and September 30, ground wood stocks at mills were reduced to the large extent of 60,000 tons, there having been total stocks of 187,580 net tons on the first-named date and but 127,198 net tons at the end of September. This means, of course, more ground wood is being consumed than produced, as in September shipments from mills and used by mills amounted to 132,660 net tons, whereas only 102,350 net tons were produced in that month.

Ground wood prices are firm, and domestic grinders are reported freely securing $35 a ton and higher for prompt shipments f.o.b. pulp mills. Imported ground wood is quoted at around $39 a ton ex-dock at New York.

CHEMICAL PULP. — A firm price tone prevails in chemical wood pulp and the market continues fairly active though in some quarters it is said demand has eased off to an extent. Producers and importers, however, are quoting stiff prices, and seem to be getting the figures asked, the quieter condition noted in some parts of the trade evidently being due to difficulties in shipping pulp by railroad. Domestic manufacturers of bleached sulphite are reported sold up practically for the remainder of the year, and there is also a limited supply available of news grade sulphite. Kraft pulp is in a strong position and quoted firmly at around 3 cents a pound for both Scandinavian and domestic.

Production of chemical pulp in the United States in September showed an increase over August, a total of 170,329 net tons o fall kinds of chemical pulp being produced by mills, against 158,208 tons in August, despite which mill stocks declined in September from a total of 52,442 net tons of chemical at the beginning of that month to 51,319 tons at the close of the month.

RAGS. — Weakness in roofing stock is still the outstanding feature in papermaking rags. Mills evince little or no interest in these rags, apparently having their requirements covered for a time and presumably expecting lower prices, and aside from occasional sales, the movement of roofing stock has dwindled down to almost nothing; that is, insofar as regards rags moving out of New York City. Prices have worked down until felt paper manufacturers can easily buy No. 1 roofing stock at 1.20 cents a pound f.o.b. this city, and No. 2 packing down to as low as 1.05 cents a pound.

No change of note is recorded in other grades of rags. Old whites are holding in price, as are thirds and blues, and new cuttings of all grades are steady to firm. Dealers in New York ask around 11.50 cents a pound f.o.b. for No. 1 white shirt cuttings, 4.25 cents for No. 1 washables, 10.25 cents for new unbleached muslins, 7.50 cents for new light silesias and 6 cents for new blue overall cuttings.

PAPER STOCK. — Low grades of waste paper have eased off a few points further in a market which is seriously affected by difficulties in effecting shipments to mill centres. Then, too, demand from consuming quarters has decreased, this probably being do in part to the fact that manufacturers, knowing they cannot get prompt deliveries, are holding off in placing orders. No. 1 mixed paper is offered at $1 a hundred pounds f.o.b. New York, and folded newspapers at 1.20 cents a pound New York. City mixed paper is reported to have sold down to 80 cents a hundred pounds, No. 1 overissue newspapers at 1.40 cents, and No. 1 container manilas at 1.35 cents per pound. Shavings are fairly steady at around 3.85 cents a pound for No. 1 soft white, and 4.25 cents for No. 1 hard white shavings, and flat stock shows little change at quotable figures of 2.60 cents for heavy books and magazines, and 2.20 cents for mixed books.

OLD ROPE AND BAGGING. — A rather consistent movement of old rope to paper mills is reported and prices are holding up at an average level of 6 cents per pound at dealers' shipping points for No. 1 domestic manila rope. Old bagging is in routine demand only, with business quite spotty. No. 1 scrap bagging is available to mills at 1.15 to 1.25 cents per pound f.o.b. New York, while roofing bagging is offered at 80 to 85 cents a hundred pounds without attracting buyers.

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With The Woodsmen

BIRDS VERSUS BUGS

A woodlot that is sufficiently protected to serve as a bird sanctuary is a beauty spot where wild flowers and wild fruits will flourish. Moreover, it would be growing valuable timber for future generations, and during the war we found our supplies of fuel of great importance. Strikes and industrial wars may make them more valuable in the future. Even in Western Ontario there is much land that would be better if planted to trees than going on as weedy pasture. One might go on to a great length showing why what is left of our woodlots should be preserved, and, where the cattle have been allowed to run in them, why they should be fenced in and replanted with young trees to give them a proper start. But I do not think any better argument can be found for this reforestation than that it will provide farmers with innumerable helpers in the strenuous business of keeping down insect pests. Every once in a while the entomologists issue a warning that unless insects are kept in check, good production will rapidly become unprofitable, if not impossible. Some of the most eminent of them do not hesitate to assert that unless the insects are fought methodically and strenuously they will render the earth uninhabitable for human beings. We have already developed all kinds of sprays and poisons as the munitions for this war, but I am inclined to think that the natural method is the best. Start a back-to-the-land movement for our native insectivorous birds by providing the necessary nesting places and hiding places for them, and protecting them from enemies. If it were possible to start the opposite of a sanctuary for house sparrows and cowbirds I wouldn't mind having one blazing in every township, but I hardly see how it could be managed. How would it do to start to work with a slogan: "Bird sanctuaries instead of bug sanctuaries"?—Peter McArthur.

THE VALUE OF REFORESTATION

The great value of the systematic planting of young trees was fully demonstrated in Scotland during the late war, when thousands of acres of magnificent Scotch pines were available for the construction of railway ties and other military works in France and Belgium. Most of these trees were cut down and sawn up by Canadians. Whole acres of standing timber were of necessity commandeered by the government and the proprietors were paid good sums for the product. In one instance an area in the Highlands had been denuded of its trees to furnish material during the Napoleonic wars, only a tree being left here and there for self-seeding purposes. The result was that this forest, the forest of Glenmore, sprang up again more vigorous than ever, and was again cut down for the Great War, almost exactly a hundred years after its demolition, the proprietor receiving for the timber about $180,000.

TIMBER LANDS

Owning timber land to-day is like having money in the bank, and prudent farmers are husbanding their resources in the shape of trees. A woodlot may be meagre but with intelligent treatment it can be made to give a good return either in yearly growth or in the shape of firewood. Only dead or fallen trees should be used for the fireplace or the cooking stove.

FOREST FIRES AND THE NEWSPAPERS

Many newspaper editors maintain that the daily and weekly press are paying the bills for forest fires. This refers, of course, to the destruction of paper-making woods, spruce and balsam.

This statement is not exaggerated. Spruce and balsam are the raw materials of newsprint paper. Dear wood automatically follows forest fires as the United States paper mills are finding to-day. When Ontario loses 700,000 acres of timberlands by fire in a single season, and Quebec another 600,000 acres, it is not difficult to understand that the price of depletion must be paid by the ultimate consumer of wood products. We cannot hold down the price of newsprint paper and at the same time allow forest fires the right of way.

ONTARIO TIMBER SALES

Toronto, November 1,—By disposing of timber limits which totalled 187 square miles in area, the Ontario Government today made a record for this year in the matter of a single day's timber sales.

The successful tenderers are the Continental Wood Products Company, of Elsas, Ontario; the Mageau Lumber Company, Limited, of Field, Ontario; the Pigeon River Lumber Company, of Port Arthur, Ontario, and the Hope Lumber Company, of Thessalon, Ontario.

The principal limit sold was that in Sherlock township in the Sudbury district, which was secured by the Continental Wood Products Company. The limit is eighty-one square miles in area, and the prices which the company will pay are: White pine, $4.50 per thousand feet; red pine, $3.50 per thousand; spruce, poplar or basswood, $3 per thousand feet: other timber, $2.25 per thousand feet.

Two berths totalling seventy-two square miles in area in Mississauga township in the Algoma district were disposed of to the Hope Lumber Company. The prices agreed upon are: For berth 4 G.: Pine timber, $10.76 per thousand feet; spruce, poplar or basswood, $4.50 per thousand; other timber, $3.50 per thousand; for berth 4 H.: Red and white pine, $10.26 per thousand feet.

For 25 square miles of timber situated south and west of Greenwater Lake, near Kashabuie, in the Thunder Bay district, the Pigeon Lumber Company will pay: Pine timber, $12.50 per thousand; spruce timber, $9.50 per thousand; poplar timber, $7.50 per thousand; spruce pulpwood, $2.02 per cord.

Fir nine square miles in the township of Henry in the district of Nipissing the Mageau Lumber Company, Limited, will pay $11.50 per thousand for red and white pine.

FOR TIMBERLAND OWNERS, FORESTERS AND ENTOMOLOGISTS

The treatise on control of the spruce bud worm, bark beetle and borer, written by Mr. O. Schierbeck, Forest Engineer of Price Brothers, Ltd., Quebec, winner of the Barnjum 5,000.00 prize, open to the world, is now in the hands of the printer and will come off the press about the last of November.

In the interest of the conservation of our small remaining wood supply Mr. Barnjum will mail copies of this work, free of charge, to bona fide timberland owners, foresters or entomologists, upon request by addressing Frank J. D. Barnjum, 707 New Birks Building, Montreal, stating whether owner, forester or entomologist.

EXPORTS OF PULP AND PAPER FOR September 1922

The value of the exports of pulp and paper in September was somewhat lower than in August, being $10,332,283 compared with $10,621,273 for the previous month. Compared with September 1921, however, the total value showed an increase of $875,256.

Figures for September 1921 and 1922 were as under:

	September 1921		September 1922	
Paper	cwts	Value	cwts	Value
Newsprint	1,224,136	$5,503,368	1,591,145	$5,632,758
Book Paper . . .	810	9,432	4,675	37,759
Other Paper and Manufacturers . .	....	261,807	....	574,097
		$5,774,607		$6,244,614
PULP:				
Sulphate (Kraft) . .	225,192	753,418	270,053	825,789
Sulphate Blchd....	118,515	492,471	228,190	933,358
Sulphate Unblchd..	238,086	762,489	563,068	1,310,640
Mechanical	658,027	1,674,042	739,364	1,017,882
	1,239,820	$3,682,820	1,800,675	$4,087,669

Exports of chemical pulp show considerable increase in September over the August figures. Kraft pulp exports were 270,053 cwts valued at $825,789 compared with 253,158 cwts valued at $774,643 in the previous month; unbleached sulphite exports were 563,068 cwts valued at $1,310,640 compared with 347,110 cwts valued at $852,666.

Principal countries of destination were as follows:

	Paper	Pulp	Total
United States	$5,504,945	$2,851,550	$8,356,495
United Kingdom . . .	167,563	891,572	1,059,135
All other	572,106	344,547	916,653
	$6,244,614	$4,087,669	$10,332,283

Pulp wood exports for the month were 94,351 cords valued at $974,568.

The value of the exports for the first half of the current fiscal year shows a considerable increase over the corresponding six months of 1921. Details are given below:

	6 months 1921		6 months 1922	
Paper:	cwts	Value	cwts	Value
Newsprint . . .	6,357,357	$31,277,763	9,285,986	$32,890,140
Book Paper . . .	12,434	159,018	19,347	137,269
Other Paper and Manufacturers..	....	1,942,727	....	3,039,262
		$33,379,508		$36,066,671
PULP:				
Sulphate	889,803	$ 3,361,153	1,457,867	$ 4,455,895
Sulphite Blchd....	659,560	3,207,383	1,533,152	5,761,122
Sulphite Unblchd.	1,077,912	4,097,864	2,225,666	5,511,059
Mechanical . . .	2,089,416	5,137,759	3,190,307	4,445,126
	4,716,691	$15,804,159	8,406,992	$20,173,202

Exports of pulp wood for these six months were 506,012 cords valued at $5,229,901 in 1922 compared with 421,388 cords valued at $5,546,785 in 1921.

There is no reason why Canadian farmers should not put all their uncultivable land into timber, and why they should not conserve their bush areas and turn them to the best advantage by removing dead and fallen trees ,and otherwise putting to practical use what knowledge of forestry they have acquired. The government is beginning to wake up in this direction, but much remains to be done before a real start can be made. One difficulty seems to be to arouse the farmers to the potential value of their bush acreage and to a live interest in the importance of forestry generally.

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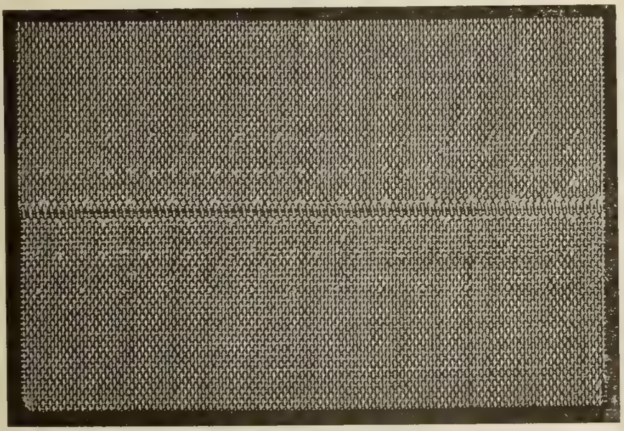

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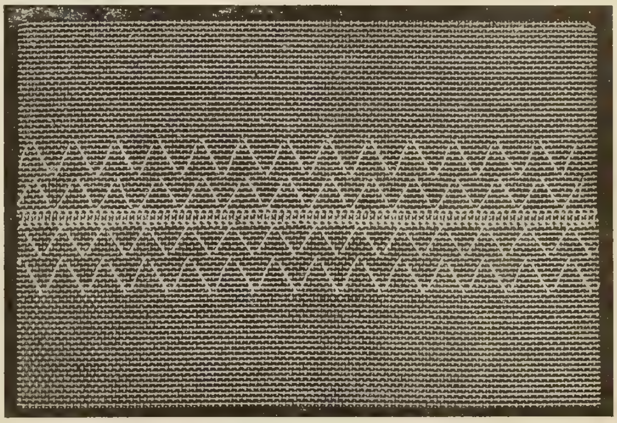

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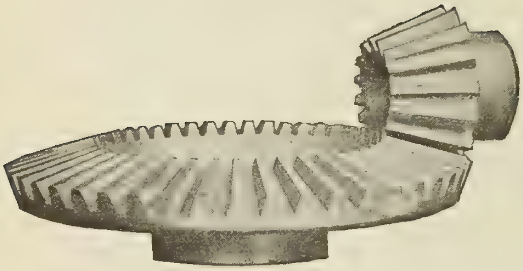

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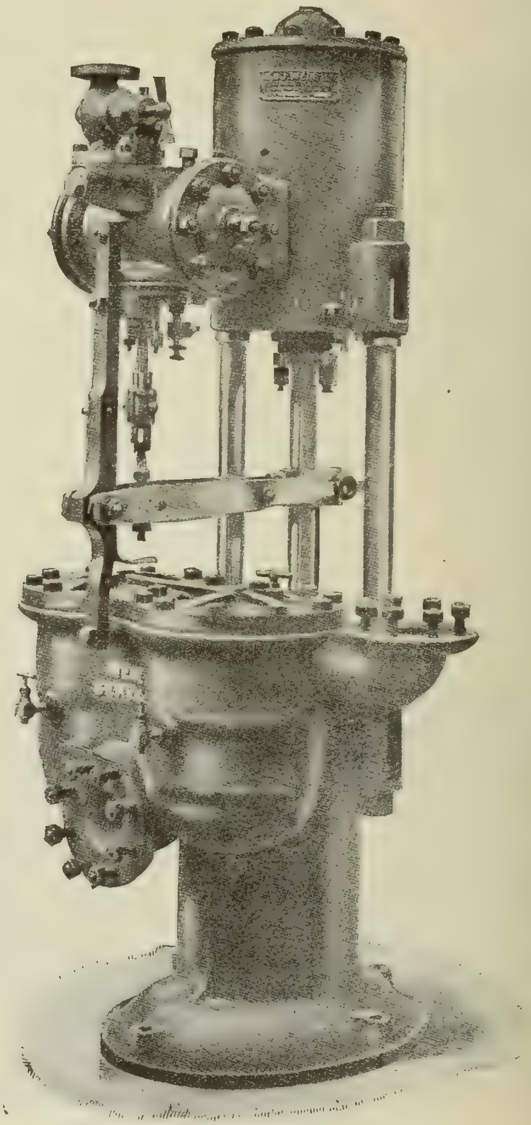

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VOL. XX. GARDENVALE, Que., November 16, 1922 No. 46

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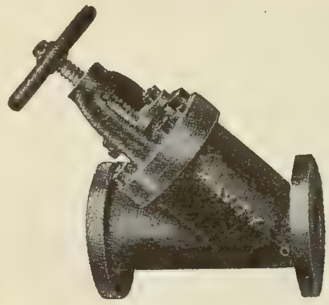

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-:- EDITORIAL -:-

CONCERTED ACTION ON RESEARCH

At their last meeting, the executive of the Canadian Pulp and Paper Association approved the idea of concerted action and co-ordinated effort in attacking problems affecting the industry in Canada. The suggestion, as presented in a report of a special committee on research, is to establish a department of the C. P. & P. A. under a Director of Research. This is probably the most important step yet taken by the Canadian Association, and once more puts the pulp and paper industry in Canada in the lead with respect to constructive co-operation in the interests of the trade and art of paper making. The management of our mills appreciate the vital importance of this industry in Canada's economic life; an importance that must increase as time goes on.

There are three fundamental factors in the assurance of continued successful competition of Canadian pulp and paper in the world's markets—**conservation of forest resources, development of water powers,** and **efficient operation of mills.** All of these require the contribution of technically trained brains, directed and united into one powerful current of constructive thought and effort by mill managements with big enough vision and keen enough appreciation to make common cause and stand together for progressive action. We believe our industry has such men and we believe they will not merely stand, but move forward together in their laudable desire to put Canada's pulp and paper industry on such a sure foundation that it will never be shaken loose. Some will say that this is but self interest and self protection. It is that, but it is more than that. In protecting this industry, is not Pulp and Paper Association contributing a very great service to the Dominion? Is it not a big thing to insure profitable employment in woods and mills to more than 50,000 Canadians? Is it not a contribution to be proud of that Canadian paper is the ammunition by which illiteracy is being fought and beaten in half the countries of the world? There is no ground for sneer or censure, but reason for a vote of sincere thanks to any steps our Association may take to perpetuate the pulp and paper industry in the Dominion.

The plan of a Research Department calls for nothing elaborate in the way of housing or equipment. It calls for one thing only, but one big thing—**a man.** The Research Director will have a life size job on his hands, but one which he may make a life work affording great and lasting satisfaction. He will have two instruments to use in helping the mills solve their problems—the laboratory facilities of the various member plants, which in the aggregate provide really enviable facilities, and a library service, which is yet largely to be organized. Tact, perseverance and patience will be major characteristics of the Director, together with ability and special training. It may be possible to find a man already "made" for the position, but it may be necessary and perhaps better, to find a man with "the makings." The position is a very desirable one in many respects and offers a unique opportunity for the development of personality and power.

The principal endeavor of the Research Director will obviously be the co-ordination of facilities in the various mills so that problems can be attacked by joint forces. By simultaneous work in several laboratories on individual phases of a common problem, results of service to several mills can be obtained most quickly. Duplication of effort will be avoided and expense saved on this item as well as on the earlier use of results. Many mills do not appreciate the value of a library, but they will soon after the Research Director gets busy. His service in this direction alone is sure to compensate any mill for its contribution to this part of the Association budget. As we see it, many mills will be shown troubles which they were not aware of, and by correcting them will be able to make economies and improve products that will mean more profits and better satisfied customers.

It will take time to bring this new department, if it is approved on the annual meeting, to its fullest efficiency, but the Executive is wisely preparing for it and we congratulate the association on having officers who dare make a beginning; or, shall we say, who realize they dare not delay making a start.

OUR IMMIGRATION PROBLEM

It is announced from Ottawa that the views of leading immigration and colonization department officials on the recommendations of the transportation interests for changes in the immigration laws will be submitted to Hon. Charles Stewart Minister of Interior, shortly. Mr. Stewart eturned to the Capital from Edmonton last Friday. At the time representatives of the transportation interests interviewed Mr. Stewart it was understood that the conference of the departmental officials would review the situation. This has been done and, it is understood that Mr. Stewart will take the whole matter under consideration.

It is earnestly to be trusted that there will be no further delay on the part of the Government in evolving an immigration policy of a kind commensurate with the magnitude and urgency of the problem. The late Government propounded no adequate immigration policy at all, and, thus far, the present administration has showed small symptoms of departing from the non-aggressive lines adopted by its predecessor on this vital question. It has been sought to justify the inactivity of the past few years on two main grounds: First, that agriculture was not, at the time, sufficiently profitable to render it attractive to the right class of settlers; and, secondly, that, with unemployment so prevalent in this country, the time was not profitious for bringing in settlers in large quantities.

These objections, whether, in the past, of substance or not—and personally we are a little inclined to view them as excuses for Governmental inactivity rather than as reasons for it—have now, fortunately, ceased to have much force. As Mr. E. W. Beatty, the president of the C. P. R. stated at Vancouver, some four or five weeks ago, the farmer on the Prairie is not opposed to immigration but rather invites it, and the Trades and Labor Congress of Canada has recently gone on record as believing that immigration is the quickest way to people Canada providing the immigrants are of the right character, namely, those who will naturally assimilate into Canadian life and are physically and morally fit.

The road is therefore clear, as Mr. Beatty proceeded to point out, for the adoption of aggressive immigration measures, preference being given, of course, to those immigrants who can be placed on the land and to the citizens of countries who are not, by race or religion, prevented from being in due course representative Canadian citizens. But much precious time is being lost, and still there are no signs of any aggressive policy on an adequate scale. We have it on the testimony of Sir George McLaren Brown, European general manager of the C. P. R. that the main reason why proper immigration to Canada has fallen away so seriously is because of the lack of active propaganda. It is up to the Government to remove this reproach — and to remove it forthwith. The country is looking to it for a forward immigration policy, sanely conceived and vigorously executed. Hitherto, as we have said before to-day, the trouble with our immigration has been that, very largely, it has been either allowed to take care of itself or has been improperly directed. The time has gone by for spasmodic efforts and slipshod and haphazard methods. The Government is seised of the cardinal facts of the situation, and the country is looking to it to produce, without further procrastination, a policy adequate thereto.

Canada needs hundreds of thousands—if not millions—of settlers from other lands to help increase production, and thus to help meet the vast debts she has incurred in the creation of extensive and very costly transportation systems and in the prosecution of the war. Yet what is happening? Well, the main facts of the case were thus summarized by Mr. Beatty in the interview at Vancouver from which we have quoted above: "In the 10 years from 1911 to 1921 the total immigration into Canada was 2,123,000 and the natural increase in population was 1,100,000. Notwithstanding this the total population of Canada has only increased during these 10 years by 1,500,000. During the year 1920, 117,000 people entered Canada, and 90,000 emigrated to the United States. Our national debt is approximately $270 per capita, and the interest on it is $13 per capita, and there is one mile of railway in operation in Canada for every 236 persons, and in the four western provinces for every 110 persons. In excess of 25,000,000 acres of land fit for settlement lie within a distance of 15 miles on each side of existing railways in the three prairie provinces. With these conditions confronting us what other course is open save to make colonization and the development of these resources the foundation for the future development of Canada. The need for action is made doubly apparent when it is considered that during the first six months of the present year less than 50 percent in number of immigrants entered Canada than during the same period of 1921."

We are living in a land that is, potentially, rich beyond compare. In Europe, there is an over-crowded continent of people, increasingly anxious, on economic grounds, to leave their own lands for a land of brighter hope and larger opportunity. With our vast natural resources at hand for exploitation, and an assured reward for the workers who will come and assist in their exploitation, yet the workers are not coming in anything like sufficient numbers. They are not coming because of our lack of active propagrand—our lack of a definite and efficacious immigration policy.

The future welfare of Canada is inextricably bound up with the prosperity of its transportation concerns. We have huge railway systems which can only be maintained by traffic, and the increased traffic needed can only be secured by great agricultural expansion in the West, by the proper utilization of our resources in mines and timber, and by consequent industrial expansion in the East. These transportation companies have asked the Government to make such alterations in the present restrictive system as will help forward immigration. In other words, they have asked for the adoption of a broader policy of immigration.

Our readers do not need to be told that we are not in favor of a reckless and indiscriminate removal of all barriers. For we have consistently advocated the proper direction and regulation of immigration. And we yield to none in realization of the basic fact that the immigration problem is only a facet of the broader problem of population and that about population as a keystone is constructed the arch of civilization. But because we recognize that sanity and sobriety are essential to any proper national immigration policy, that does not mean that we are in favor of either narrowness or inaction. On the contrary, we believe that breadth and aggressiveness are indispensabe concomitants of a constructive and properly diected and egulated immigration policy such as it is to be hoped that the Government for the country's good—and incidentally for its own—will produce and put into effect without further delay. — Journal of Commerce.

Foreign Newsprint-Paper Industry and ~~its~~ Relation to United States

By CONSTANT SOUTHWORTH,
Prepared in Collaboration with the United States tariff
Commission for U. S. Commerce Reports

In 1921 it was estimated that the world's approximate newsprint producing capacity and consumption per annum, by principal producing countries, was as follows:

Estimated annual producing capacity and consumption of newsprint. [1]

Countries	Producing capacity *Short tons*	Consumption *Short tons*
Germany	530,000	300,000
Great Britain	300,000	450,000
France	150,000	210,000
Sweden	185,000	30,000
Finland	150,000	10,000
Norway	110,000	10,000
Other European count.	200,000	110,000
Total (Europe)	1,625,000	1,120,000
United States	1,500,000	2,000,000
Canada	1,000,000	130,000
Japan	150,000	(2)
All other countries	40,000	(2)
Total (world)	4,315,000	(2)

[1] Figures from International Newsprint Conference at Stockholm, April, 1921; from Newsprint Service bureau; and from reports to the Bureau of Foreign and Domestic Commerce.

[2] Figures not available.

Canada, Germany, and the Scandinavian countries are the only foreign countries with an important export trade in newsprint that competes in American and foreign markets with American newsprint. The United Kingdom and France are forced to import a considerable portion of the newsprint they use. Russia, in normal times, is an importer of newsprint, in spite of its vast forests. As in most other lines of industry, Russia is backward in newsprint manufacture. Japan is not an important competitor in the world's markets.

Growth of Canadian Newsprint Industry

The most striking development in the printing-paper field has been the increase during the last decade in Canada's newsprint production. The American newsprint industry about 1909 ceased expanding to meet the expanding domestic demand of the newspapers. On the other hand, the Canadian newsprint industry since 1909 has emerged from obscurity, and in 1921 produced an amount equal to two-thirds of the American output. It is almost certain that in a few years Canada will be the largest producer of newsprint in the world. The Canadian newsprint production since 1909 has been as follows:

	Short tons.		Short tons.
1909	150,000	1917	689,847
1913	350,447	1918	734,783
1914	414,982	1919	794,567
1915	488,621	1920	883,215
1916	607,976	1921	812,860

In 1917 the value of the Canadian output was $38,869,084; in 1918, $46,230,814; and in 1919, $54,427,879.

The American and Canadian newsprint paper industries should be thought of as essentially one entity, having the same principal markets and the same interests, in so far as national lines are not drawn through protective-tariff duties or export embargoes on the finished product, or on essential raw materials. Geographically they form, in the main, one group of mills, being much more closely connected with each other than different portions of some other industries lying entirely inside the United States. To a certain extent they use raw material from the same source. A large part of the Canadian and the American newsprint mills are members of one association, and about half the capital invested in the Canadian newsprint-paper industry is of American origin. As a result of these conditions, we may regard Canada's development almost as a northward extension of the domestic industry, taking place largely for the purpose of supplying American newspapers with newsprint. Yet the fact that Canada is a separate political unit has played a considerable part in accelerating the northward movement of the industry through the Canadian provincial pulp-wood embargoes, which make Canadian Crown-land pulp wood unavailable to mills in the United States. These embargoes and other factors influence the comparative production costs in the two countries.

Due in large measure to its lower production costs, Canada in 1921 lost a much smaller proportion of its oversea export trade than did the United States. United States exports of newsprint decreased from 45,000 short tons in 1920 to 16,000 short tons in 1921. Between the year ended March, 1921, and the year ended March, 1922, Canadian overseas exports of newsprint decreased only from 87,000 to 52,000 short tons.

From 1917 until 1920 the Canadian Government forced newsprint manufacturers to retain 15 per cent of their production for home consumption. On April 6, 1920, however, the Supreme Court of Canada decided that this restriction was illegal. After that date Canadian producers were free to dispose of their products as they pleased.

Production of Newsprint in Germany

Recent figures for newsprint production in Germany are not available. In 1921 it was reported, however, that the German output of newsprint was increasing while the consumption was decreasing, with the result that there was an exportable surplus.

According to a German paper journal, the number of mills making newsprint in Germany increased 25 to 30 per cent between 1919 and 1920, while consumption decreased 30 per cent, due partly to a decrease in the average size of newspapers. Mills formerly engaged in the manufacture of wall paper, book paper, etc., turned in many cases to producing newsprint. In 1921 and 1922 newspapers in Germany found it difficult, on account of the unstable financial situation, to purchase their newsprint supplies. As the mark declined in value, prices of newsprint had been advanced considerably, and many newspapers were forced to suspend. A condition approaching disaster faced the newspaper-publishing industry in the summer of 1922, but remedial legislative measures (described below) were taken in July.

At the same time, a lucrative export business in newsprint was made possible through the abnormal exchange situation. Germany's exports of plain print paper (mainly newsprint), which in 1913 amounted to 69,000 metric tons, fell to 45,000 metric tons in 1920, and increased to the rather extraordinary amount of 109,000 tons in the 12 months ended April, 1922.

In the fall of 1920 Germany began to export newsprint to the United States. In August, 1922, these exports were still continuing in considerable volume. Likewise, in 1921 Germany cut heavily into the market in Latin America and other importing regions, which the United States had enjoyed during the war and up to the world-wide business depression in the latter part of 1920. In 1922, owing to the heavy demand for newsprint and the increasing difficulty of securing raw materials, German manufacturers had great difficulty in filling their orders. From March to August, 1922, average monthly imports of German newsprint into the United States amount to only three-fifths of the monthly average in 1921.

From April, 1916, to April, 1921, the German newsprint industry was subjected to Government control, known as "Zwangswirtschaft," the purpose of which was to force the newsprint mills to make the best possible use of their resources and to supply the German newspapers with newsprint expeditiously and to the full extent of their needs. Since April, 1921, when the "Zwangswirtschaft" ceased, the German newsprint consumer has derived indirect assistance from the semi-official Foreign Trade Control Office. This office grants export licenses and is permitted by the Government to issue such licenses only when the demands of the German newspapers have been filled. The distribution of newsprint paper is controlled by two syndicates, or cartels, which make recommendations to the Foreign Control Office in the matter of export prices and quantities available for export. These syndicates are the Verband Deutscher Druckpapier-Fabriken and the Verein Ringfreier Zeitungsdruckpapier-Fabriken, both in Berlin. In the early part of 1920 they selected Wilhelm Hartmann & Co., a large commission house, to take charge of a portion of their export sales. Hartmann & Co., however, did not at any time handle more than half of the export business in newsprint. Their contract with the syndicates lasted only two or three months.

Contrary to a report at one time circulated in the United States, the German newsprint industry in its domestic trade and in its exports has received no Government subsidy. The only Government assistance given the newsprint manufacturers in the last few years has been the action of the Government in helping the industry to receive its allotments of freight cars and coal.

However, the newspaper-publishing industry of Germany began in July, 1922, to receive direct Government subsidy. Due to the unsatisfactory politico-financial situation, as noted above, many newspapers had become unable to pay for the newsprint they needed. Consequently, on July 21, 1922, the Reichstag passed a law, the most important part of which was a provision for a tax of 0.15 of 1 per cent on the value of German exports of all kinds of commodities, the proceeds of which are to be turned into a so-called "reimbursement fund for the German press." This fund will be used to reimburse the press for the amounts paid for newsprint paper in proportion to the quantity consumed. In ascertaining the amount consumed, paper used for advertising will not be taken into account. A sliding scale is to be used by which the reimbursement per unit of newsprint purchased by any one newspaper varies inversely with the amount purchased. Thus large editions are discouraged. Pending executive regulations fixing the date on which this export tax was to go into effect, the Government was empowered to make the granting of an export license conditional upon the payment of a special contribution to the reimbursement fund, amounting to 0.15 per cent of the value of the goods exported.

Certain other provisions of the act of July 21, 1922, took effect on the day it was passed. A tax of one-half of 1 per cent was levied on the prices of timber sold by persons having the use and profit of forest land of more than 10 hectares in size. The proceeds of this tax go into the reimbursement fund (above described) to be used for the benefit of the press. The law of July 21, 1922, also authorized the Federal Government to establish maximum prices for timber, chemical wood pulp, and printing paper on the basis of production-cost figures to be compiled by the Government, and to unite the manufacturers of wool pulp and printing paper, and establish a uniform scale of prices for all of them.

Newsprint Output of the Scandinavian Counties

Although Sweden, Norway, and Finland are not large producers of newsprint, compared with countries like the United States, Canada, and Germany, they are of considerable importance in meeting the deficiencies in production of such countries as the United Kingdom, France, and (in normal times) Russia. Indeed, the position occupied by these Scandinavian countries in relation to the either western European countries is much similar to Canada's position in relation to the United States. Owing to development of the newspaper-publishing industries and the increasing inability of the forests to supply the necessary pulp wood in the United Kingdom, France, and other western European countries, the northern regions, more plentifully forested, were called on to help out. The newsprint production of these countries could be considerably increased if they should undertake to convert a larger proportion of their wood pulp into paper, but as the pulp they export is now made into paper by the importing countries, this would merely mean a change in the place of conversion into paper, and not an increase in the world's supply, or even in the Scandinavian exports of forest products.

In the past three years, Sweden, Norway, and Finland have demonstrated that in coarse papers like newsprint they are important competitors of the United States in international neutral markets. Not only have those countries, in combination with Germany, secured much of the trade in newsprint held by the United States during the war and up to the summer of 1920 in Latin America and other important importing areas, but, beginning with the fall of 1920, they have sold considerable amounts to American newspaper publishers in competition with American and Canadian newsprint.

In 1919 and 1920 Sweden produced approximately 100,000 and 165,000 metric tons, respectively, of newsprint paper. About two-thirds of the Swedish production is exported. Norway exports practically the whole of its production, which is usually not much more than half that of Sweden. Finland produced about 100,000 metric tons of newsprint in 1920, and exported almost all of it.

Before the war Finland marketed most of its newsprint paper in Russia. In 1921 England was much the largest purchaser of Finnish newsprint, with the United States second. Being forced to develop new markets in western Europe and later in the United States, when internal strife cut off Russia from international trade, has been a good thing for Finland. That country will doubtless again devote much energy to supplying the Russian import market when it returns to existence, but will not abandon its newly acquired markets in the West. Finland, with its huge forests and abundant water power, may possibly in a few years eclipse Sweden and Norway in the magnitude of its paper industry, for it has a large undeveloped capacity not possessed by its Scandinavian rivals.

As will appear in the figures shown in the next table, Finland's export trade in newsprint enjoyed greater prosperity during the depression of 1921 than did the newsprint export trade of either Norway or Sweden. Apparently the newsprint and other paper produced in Finland have made a favorable impression on the large paper-consuming nations of western Europe and even on the United States.

The tendency in Finland is to manufacture into paper an increasing proportion of the pulp produced. The combination of Finnish resources with the enterprise Finland is showing in developing them since becoming independent of Russia promises to make Finland second only to Canada as an exporter of newsprint paper. If oversea exports were the only consideration, Finland would probably gain the first place.

The Japanese Newsprint Problem

In 1919 and 1920 the production of newsprint by the Association of Japanese Paper Mill Owners amounted to 115,000 short tons and 127,000 short tons, respectively. Japan is now able to supply practically the whole of the domestic demand for newsprint, using domestic, Canadian, and Swedish pulp in its manufacture. However, in 1922 the cost of manufacture was reported to be so high that European newsprint had no difficulty in competing with Japanse newsprint in the Japanese market. Japanese exports of newsprint are of little concern to the newsprint-exporting industries of North America and Europe. The United States exports considerable quantities of newsprint to Japan.

Summary of World Trade

The following table shows the exports of newsprint during the last two years for which figures are available, compared with 1913, from the countries important as exporters of newsprint. It should be noted that the Canadian figures do not include exports to the United States, which are very much similar to American domestic business. They include only Canadian oversea exports. Except where specifically indicated that other kinds of printing paper are also included, the figures apply to newsprint only.

Exports of newsprint in 1913, 1920, *and* 1921

Countries	1913	1920	1921
	Metric tons.	*Metric tons.*	*Metric tons.*
Germany . . .	69,000	45,000	[2] 109,000
Finland . . .	[1] 70,000	90,000	94,000
Sweden	62,000	116,000	112,000
Norway	[1] 98,000	77,000	46,000
Canada [3] . . .	[4] 70,000	79,000	47,000
United States. .	46,000	42,000	15,000

[1] Figures are for printing paper (probably mainly newsprint).

[2] Figure is for 12 months ended April, 1922.

[3] Canadian figures include only oversea exports. They are for the years ended March 31, 1914, 1921, and 1922.

[4] Computed from a given total value of $1,568,000 and an estimated unit value of 2 cents per pound; figure is only approximate.

Finland and Germany did better in their 1921 newsprint export trade than did Sweden and Norway. As noted above, Germany's exports of newsprint more than doubled between 1920 and 1921, Finland's increased a little, and Sweden's decreased slightly. Norway's 1921 exports were much smaller than those of 1920. The situation in Germany has been so abnormal, by reason of its depreciated exchange, that it is hardly to be compared with the Swedish and Norwegian situations. In the case of Finland, however, the continuity of production and absence of strikes, lockouts, and other kinds of industrial trouble during the last two or three years stand in such contrast to conditions in the Swedish and Norwegian industries that they can not be explained solely on the ground of advantages accruing from depreciated exchange. Finland probably has a permanent advantage over Norway, Sweden, and Germany as an exporter of newsprint paper.

World Situation in Relation to United States Imports

In the year 1920 consumers throughout the world competed for newsprint. The shortage was felt wherever newspaper printing was an important industry. In certain European countries the sizes af newspapers were drastically cut and Government rationing was resorted to. Under conditions like these the newsprint producers of one country need not fear competition from other countries, for every producer, even though his cost of production be relatively high, has a ready market at a profitable price. Consequently in 1920 the American newsprint industry, aside from its relations with Canada, was practically free from foreign competition.

Since the latter part of 1920, however, the world demand has not been large enough to absorb the full capacity production of the world's newsprint industry. Particularly in Europe has the decreased demand been felt. As a result, toward the end of 1920 Germany and the Scandinavian countries, in order to keep their mills running, had to look to the markets of the United States. The American newsprint industry quickly felt the effect of foreign competition. Whereas, in 1919 our imports of newsprint from Europe equaled less than one-hundredth of 1 per cent of our domestic production, in 1921 our newsprint imports from Europe equaled 17 per cent of production. Our newsprint exports decreased from 8 per cent of our production in 1919 to 1.4 per cent in 1921. Imports from Europe, in combination with our decreased exports, prevented the unprecedented domestic demand from bringing about a market shortage in the spring of 1922 similar to that of 1920.

With newsprint remaining on the free list, the United States may expect in all probability that imports from Europe will continue. A corporation has recently been formed in New York for the purpose of marketing in the United States the product of certain Scandinavian newsprint mills. As closer contacts between European products and United States consumers are established, the European mills will become better able to suit the exact requirements of United States newspapers. The North American newsprint industry must henceforth reckon on competing in its domestic market with substantial shipments of European newsprint.

The generous response of the North to the fire sufferers calls to mind the world-old truth—"Inasmuch as ye have done it unto the least of these, ye have done it unto me." Besides food and clothing, Iroquois Falls people give $1850 in cash. Many of them have suffered from forest fire and gave from sympathethic hearts.

Wealth is not the dollars you possess but the dollars you have given. That kind of wealth no one can take from you.

WHY BELTS CREEP

There is a quality of the leather belt which is not well understood by the belt user, and which is peculiar to the leather belt, in contrast to the substitutes, and which for want of a better name is denominated as "creep." In a belt which has the quality of elasticity, as has the leather belt, and as do not have the substitutes, any particular section of the belt passing over that part of its course on the tight side, and between the two pulleys, becomes subject to the tension of the load, and is stretched much as in rubber band, but when this section has passed over the driven pulley and is on that part of its course on the loose side, where the tension is least, the belt contracts, just as does the rubber band when relieved of tension, and that particular section of belt practically resumes its former length. This is observable in a well loaded belt, running horizontally and pulling on the bottom, when under load the loose or top side will drop materially, into a graceful "belly," sometimes nearly touching the tight side, and when the load is removed and the belt comes to a rest, the belt has contracted to a point where the loose or top side resumes its former length, and apparently is nearly as tight as the pulling or bottom side. It is the elasticity of the leather which causes it to contract to nearly its original length, just as it is the elasticity of the rubber which causes the rubber band to resume its original length when tension is removed.

It is apparent that this constant motion in the belt, the elongation on the tight side, and the contraction on the loose side, must set up a motion between the belt and the pulley, by which there is some loss of rotation, and this loss is denominated "creep."

There is another loss of rotation which is due to the slip of the belt on the pulley. All belts, whether of leather, or substitutes, will slip a little. That is, that with any variety of belt, the exact rotation of the driven pulley will not exactly conform to the calculated rotation due from its size in proportion to the size of the driven pulley. In substitute belts, with little or no elasticity, this loss of rotation is due almost entirely to the slip of the belt, but in leather belts it is due to a combination of both creep and slip, and it is difficult to determine exactly the proportion of this loss which may be due to creep or to real slip.

In a new leather belt where the elasticity is the greatest, there is observed the largest loss of rotation, but as the belt becomes stretched in service, its elasticity is reduced, and the loss of rotation is also reduced, probably not because of any reduction in the real slip, but because of a reduction of the creep. If we could eliminate "creep" from a new leather belt, it is probable that the belt would show the same small slip at its first start as the most "slipless" of the substitutes, but to eliminate creep it also would be necessary to eliminate elasticity, and then the leather belt would be no more efficient than the substitute. —The Amphibian.

A sum of $10,000 will be spent by the Forest Products Laboratory in Madison, Wis. in co-operation with the Woodlands Section of the American Paper and Pulp Association, in scientific research attempting to get an effectual decay preventative for pulpwood. The annual loss from decay to the pulpwood industry is more than $5,000,000, it was shown at the annual convention of the association in Chicago.

Discontent is the want of self-reliance, it is the infirmity of the will.—Emerson.

PARABLES OF SAFED THE SAGE

The Parable of the Backfire

I know not how it is done, but this I know, that sometimes an automobile doth send its spark in the Wrong Direction.

Once upon a time, which was a few days ago, a man set forth, the and his wife and his friend and his friend's wife, and they undertook a Little Ride in the Country in an Open Car. And they came upon a Railway Track, and there the Car Stopped. And when they essayed to start it, then did the spark ignite the Gas, but it went not out so as to make the wheels go around, but it Back-fired.

And about that time I arrived.

Now, the manner of my arrival was this. I was on an Express Train, and we came thundering down the track, and we turned a curve, and we struck a Car that was Blazing. For the Back-fire to the car, so that the Combustible parts of it were aflame, and its mechanism did melt with Fervent Heat.

Now, I was in the very front Coach behind the Engine, when we suddenly bumped into that car, at the rate of Forty Miles an Hour, and we picked it up, and tangled its mechanism in our running gear, so that the flame of the Blazing Gasoline was about my Coach, and upon my side of it. And we went through fire, even as did Elijah, but there were no horses on our chariot, and we stopped a little way this side of Heaven, though not so very far. And the Automobile was a few pounds of Junk, and we were scorched and battered.

Now there was a man upon the train who lifted up his voice and said, The great Day of the Lord is near. Many shall run to and fro, and knowledge shall be increased.

And I said, Be silent. As for the speed, our train was not going fast enough; and if there be any increase in Knowledge, thou hast been omitted in the distribution.

And I knew that I had the sympathy of the folk upon the train, for it was not a time in which men wanted to hear talk that darkened counsel by words without knowledge. And indeed it had been for a few moments a Terrifying Experience, and there were certain that cried out in fear. For we knew not what had occurred, but only that suddenly we were Enveloped in Flame, and it seemed as if we should have been consumed.

Now it occured to me that it was probably some s defect in the mechanism, or in the lack of skill of him who handled it and got rattled, that machine Backfired and balked, and a very little change in the one or the other would have taken that Car off the track and sent it humming down the road; whereas, it became a Total Wreck, and nearly spoiled the day for us.

And I said unto myself that I had known men whose spritual mechanism has the same faulty adjustment, s that they Backfire when they should produce a good spark, and go steadily down the road. For there be wrecks that might be saved and perils that might be avoided if men would get a new Spark Plug in their intelligence or their disposition. — The Congregationalist.

The Naskwaak Pulp and Paper's lumber cut will be about 50 per cent. more than yas anticipated some weeks ago and will be three times as great as that of last year. Contracts have been completed for a cut of 15,000,000 feet which the season's work should produce.

Tree Planting as a Replenisher of our Timber Supply

By ELLWOOD WILSON,

Chief Forester, The Laurentide Company, Grand'Mere, P.Q.

(In Canadian Forestry Magazine)

The Editor has asked me to dicuss the relative merits of artificial vs. natural replacement of our forests, or, in other words, whether it is better to let our forests alone after we have cut them, trusting to nature to reproduce them, or whether it is better to make plantations and to fill out those places in the forest where nature has not finished the job. It would be just as unreasonable to ask me to discuss, in general, the relative merits of dry farming and ordinary farming in a region blessed with normal rainfall. No farmer in such a region would dream of dry farming, and no farmer in an arid region would attempt to farm in the ordinary way. He would be a fool if he did. A forester who should attempt to plant trees on an area which nature had already stocked with 1,500 good trees to the acre would be equally foolish if he left nature to seed in a tract of forest land with no seed trees within miles of it. The two methods are complementary and must be employed together. Each has its proper place and part in a general forestry policy, and which shall be adopted depends entirely on the location and the end desired.

How Nature Works

Let us see now what the conditions are when nature has had a free hand, taking as our example a section of the St. Maurice Valley of Quebec where we have accurate information. The description will be much condensed, as it would take too much space to go into much detail. We find, in general, a rough country, broken by ridges, with many lakes, some swamps, and a poor soil underlaid with granite. In the very wettest swamps there is nothing but coarse grass, where the swamps are not so wet we have stunted black spruce, often well over 100 years old and only five or six inches on the stump. In the valleys we have stands of red and white spruce and fir, and on the ridges, birch, yellow and white, maple, some hemlock and spruce and fir. Where fire has passed over the country, white birch and aspen have come in, and later spruce and fir have entered the mixture. In some sections where the soil is sandy we have pure stands of Jack Pine which have seeded in after a fire. Other sections have small stands of red pine and through all the forest we find individual white pine, the remnant of earlier stands.

Concentrating the Wood Crop

As today, owing to lack of transportation and sufficient demand, there is very little use for the so-called hardwoods, that is trees which lose their leaves in the winter, we shall leave out of this discussion everything but the softwoods, and of these confine ourselves to the spruce and fir. Under natural conditions the average number of such trees, four inches and over at breast height, is 160 per acre. A fully stocked stand of mature trees, 12 inches in diameter at breast height might possibly run to 400 trees per acre. The average stand of softwood in the St. Maurice Valley, 4 inches and up at breast height, is 11 cords per acre. Our fully stocked stand would give 75 cords per acre. The best natural stand of which I have any record in this section gave 40 cords per acre four inches and up, and was pure black spruce. Now there is a good deal of difference between 40 cords per acre and 75, and our planted stand would be almost 100 per cent better than we get under the very best natural conditions.

The great need in Canada is for accurate information about our forests. The public would be much surprised if they could see how little information lumber companies and pulp companies have about their timber lands, how few of them even have maps which are in any way complete or accurate. Information as to areas burned over and species and stands per acre is almost wholly lacking. This is realized and many of the larger pulp and paper companies have engaged foresters and are getting this information as rapidly as possible. The Commission of Conservation has done splendid work along these lines and the Dominion Forestry Branch has made a good beginning. So many men who attempt to discuss these subjects have very little acquaintance with the woods, except as they see them from a canoe or logging road. They are likely, in travelling through the woods and seeing here and these good samples of natural reproduction, jump to the conclusion that nature can take care of the future, if we keep the fire out, not realizing perhaps how much time has been wasted by nature in getting reproduction started, or how scattered such reproduction is.

In handling a forest property, it is absolutely necessary to look to the future and to plan operations for at least three generations ahead and it is necessary to decide what end you wish to arrive at. The right policy is one of perpetual wood production the management of the forest for suestained yield and whichever method of regeneration, whether natural or artificial, that fulfills this end is meeting the requirements. Timberland owners must take stock of their areas, determine where planting is required, and so locate their plantations as to give a maximum yield with a minimum cost, which conditions will be most fully met by proximity to the mills and using species of rapid growth. Let us take a concrete case. Let us imagine a pulp company with a plant which has cost some ten or fifteen million dollars and which has built up around it a community of five to ten thousand souls. Let us take it for granted that the directors wish to continue to manufacture pulp for the next hundred years. They might of course decide to scrap their mill at the end of twenty-five years and let the community fall to pieces and return to the wilderness, as has been done in many a community built up around a large saw-mill in the United States, but have they a moral right to let the community dependent on their enterprise go to pieces? Are they not obliged to try and keep the community alive? In order to keep the mill going they must have wood. Let us further say, for the sake of argument, that our mill has timber enough standing to keep them going for twenty-five years—what shall they do after that is gone? In the first place, will the lands which they will cut over in that time restock themselves naturally? The investigations carried on by the Commission of Conservation on such lands, show that it will take fifty to sixty years to get a crop of merchantable timber and that it will average about one and a half cords per acre. Not enough to make logging possible. There are then two other possibilities, either they must buy virgin lands or they must help nature. Many mills have already adopted the first plan and have bought lands, often several hundred miles away from their plants, which they propose to hold for the future. The transportation charges on wood from these lands will be very heavy and they are not of the very best quality, being further to the northeast where the conditions for growing timber are not so favourable. On such lands held for the future, interest on the investment must be charged, fire protection is difficult and expensive, logging costs and transportation will be very high and the ultimate yield will bring only six to seven cords per acre cutting to Government demand limits.

Changed Ways — Changed Ideas

Logging as carried on in Canada in the past has taken no thought for the future, and the results are beginning to show in the increasing inaccessibility of the timber and the large increase in logging and transportation costs. The practice was to go into the territory as near the mill as possible, to take the timber along the shores of the lakes and rivers, and to get the trees which only needed to be hauled short distances. In other words, removing the accessible timber, with no thought of a second cut.

High stumps were left, also tops—a large part of which could have been utilized. Logs which were good for pulp were used to make camps and roads. Trees a little difficult to reach were left. Much young growth was destroyed. Much logging debris was left and too often areas logged one season were burnt the next. This was not done deliberately, and no great blame can attach to the men who did the work. They and the directors of such companies were laboring under the same delusion as the general public, that we had timber for all time. Logs had to be got out cheaply in order to earn dividends. Now we know the situation and that our supplies will not last for ever and we must devise ways and means to keep our industries going.

Make Each Acre Carry Timber

The statement has been made that all we need to do is to keep the fire out and let nature alone. This is manifestly wrong and I do not think that any forester who knows the conditions will subscribe to it. Something more must be done. In casting around for better methods we have gone to Europe where they have passed through the same crisis and have found a remedy. They have been forced to log entirely differently. Instead of taking out the best trees they gradually remove the poorest trees trying always to favor the young growth and increase the STAND PER ACRE. They want timber and they want as much as they can force each acre to raise. This means that their logging costs when they first begin to manage a natural forest are proportionately high, but that, as the stand per acre increases, the logging costs decrease. We must change our logging methods so as to attain the same end, but we also must go through a period of greatly increased costs in order to improve the condition of our forests. Those of us who have studied European conditions on the ground know that we cannot adopt their methods here without modification. Foresters are agreed as to what must be done to improve logging conditions, but very few concerns are yet willing to spend the money or to reduce the cut per acre to accomplish these necessary ends.

The Case of Sweden

Now let us glance for a moment at the attitude of European and Indian foresters who have sometimes centuries of experience to go on, toward natural reproduction unaided. At the Imperial Forestry Conference last summer only one forester would consider such a thing feasible and he was in charge of pine forests which reproduced very rapidly. All were in favor of aiding nature by planting. What is the practice in Sweden where conditions are admitted to be similar to our own? They have found that they cannot depend on nature alone and always fill out by planting the spaces left vacant by natural reproduction. They have a condition there which is very different from ours. The coniferous forests contain little hardwood while those of Eastern Canada abound with hardwoods and cutting the softwoods encourages the hardwoods which gradually take up all the ground. In Sweden planting is just as much a part of their woods operations as is logging, they consider the two as part of their management of the forests.

There are thousands of acres in Canada which are unfit for agriculture and nearly always such areas can be found in reasonable proximity to our mills. Why not plant up such areas with valuable timber trees, aiding nature wherever she has made a start? Fire protection and management being over smaller areas would be cheaper and more intensive. Long drives, often taking two years, would be avoided, transport of men and provisions long distances would be done away with, local populations of men trained in woods work would be built up, as in Europe, logging costs would be much reduced as with the larger stands per acre, the use of logging machinery would be possible, and owing to the nearness and accessibility of the forest such large reserves of logs would not have to be carried with the large outlay for insurance and fire protection and interest on money tied up.

Will Planted Forests Pay?

A planted area of 250 square miles on a rotation of 50 years, that is five square miles cut clean and replanted each year, would yield 100,000 cords per annum in perpetuity, while it would take 1,302 square miles of natural forest to yield the same amount on the same rotation if the amount removed at the first cutting could be removed at the end of fifty years from the same area and this does not, in the light of our present knowledge seem possible. If the cost of carrying virgin timber lands to supply a cut at the end of forty years is figured it will be found that the cost per cord at the end of that time will be more than with planted trees and that the virgin stand will be steadily deteriorating through over maturity and insect damage while the planted stands will increase steadily in value year by year as they grow.

The great bulk of the timber in Canada belongs to the people at large and the cutting rights are leased to individuals and corporations. When this timber is cut should not the Governments make proper regulations for cutting and replanting so as to perpetuate and increase our timber supply? Canada's future economic welfare depends on the perpetuation of her forest resources. This can best be effected by proper utilization and by hastening nature's slow and wasteful methods of forest renewal by artificial regeneration.

What Is Your Job?

(Extracted from *The Valve World*)

Let us try to answer this question frankly and sanely: What is "your job"? Your job is something you have undertaken to do in a certain way within a set time and under conditions agreed upon between yourself and another person or persons. You have agreed to exchange a definite portion of your time and energy and skill, or your time and thought and experience, for something that you need or want possessed by the person or persons with whom you have made the agreement.

In the faithful carrying out of this agreement your job consists of work for yourself and work for some one else. While engaged in it you increase your skill, add to your experience, exercise your thinking powers, through practice; and in what you produce you add to the sum-total of the world's wealth, in which you share. In addition to these things, which are yours by right of your labor, you receive the agreed-upon amount of a medium of exchange which represents the stored-up previous labor of others.

It does not matter under what economic, social or political conditions you perform your labor, it always will be a matter of exchange of your own labor for the labor of others in some form or other; and always in an amount that has been agreed upon as adequate, fair or just to yourself and to that form of society of which you are a unit. It makes no difference what name is given to that form of society (industry is merely a part of the social structure), whether it is called "capitalism" or "socialism" or "communism," or what not, your labor, your job, always will be a matter of agreement, always will be an exchange of your own labor for the labor of others. And whether you control completely the entire product of your labor—which is ideal and practically impossible; or share it voluntarily or involuntarily with all other members of your society—which is socialistic; or share it voluntarily and individually by agreement with some one else—which is capitalistic; or share it as part of an organized group, privileged as to the force and coherence of its members and in which you have submerged your ability, capacity, ambition and individuality—which is unionism; you never will be able to change the fundamental fact that your labor is an exchange for the labor of others, through an agreement of some sort, and that where the greatest freedom of individual agreement and exchange exists, there will be found the largest returns from individual effort and the largest share in production on the part of labor.

As your job clearly is a matter of agreement, it must follow that it is yours only as long as you keep faithfully to the terms of the agreement. It is admitted without question that you have the right to terminate this agreement at any time, to give up "your job," provided your action does not affect the welfare of society, and that you are acting as an individual member of that society. But it also must be admitted that the other party to the agreement has an equal right to terminate the agreement at any time, under similar restrictions, and to take your job from you and give it to some one else.

Your job is yours only as long as you keep it. When you give it up, for any reason or for no reason at all, it no longer is yours. The rights of the job pass with the job itself. You do not carry them away with you. The man who takes the job that once was yours falls heir automatically to all the rights that go with it, and the same law that protected you in those rights must protect him.

Whenever a condition arises under which the man who takes the job you have surrendered is not as secure and as safe in that position as you were yourself, the fault lies with society, and the governing elements of that society are weak, inefficient and inadequate. It never should be lost sight of for a moment that if you may be allowed to quit your job and still try to hold it open for yourself with a shot gun, some other man stronger than you and with a more effective weapon may make that job as insecure and as unsafe for you as you seek to make it for one who tries to fill the place you have left.

The moment that force, other than the force of properly constituted authority, assumes to determine not only the conditions of your job but its tenure as well and the "rights" that go with it, that job becomes as great a danger to yourself as it can be for any one who, exercising his full lawful rights, braves the dangers that your unlawful assumption of force compels him to face. Your own security as well as that of others lies in your obedience to the law and your recognition of the rights of others.

Your job is your contribution to the general welfare and progress of society and of the world. If you fail to play your part some one else will play it for you. You have the right to quit your job, but you have not the right to prevent some one else from taking it. You may claim the right to be idle when there is work to do, but you cannot successfully or for long compel others to be idle also, simply because you refuse to work.

The way to hold your job is to hold it. The way to be secure in your job is to strive with all the power that is in you to make the job itself secure and safe no matter who may hold it, to fight just as valiantly for the rights of others as you do for your own rights. This also is "your job," the job of every citizen of this country, and a job that just now it not being so well done as it should be, or it would not be necessary for us to try to define just what "your job" is.

INDIFFERENCE WILL DO IT

They are a number of ways to kill an organization. The Engineering Institute of Canada has ten suggestions to offer, as follows:—

Don't go to the meetings.

If you do go, go late.

If the weather doesn't suit you don't think of going.

If you attend a meeting, find fault with the work of the officers and members.

Never accept office, as it is easier to criticize than to do things.

Get sore if you are not appointed on committees, but if you are, do not attend committee meetings.

If asked by the Chairman to give your opinion on some matter, tell him you have nothing to say. After the meeting tell every one how things should be done.

Do nothing more than absolutely necessary, but when members use their ability to help matters along, howl that the institution is run by a clique.

Hold back your dues or don't pay at all.

Don't bother about getting new members. "Let George do it."

A man cannot possibly be a gentleman if he lacks courtesy.

PULP AND PAPER PROMINENT IN ENHANCING CANADIAN DOLLAR'S VALUE

The feature of Canada's external trade for the first six months of the current fiscal year, that is to September 30, is the recovery of her exports. They totalled $395,000,000, or $53,000,000 more than for the same months last year. On the six months' operations the favorable trade balance was $32,500,000. On the operations of the same period last year there was an adverse trade balance of $36,000,000.

It would seem that this year's bumper crop of almost 400,000,000 bushels of wheat had given the impression in some quarters that wheat is the factor responsible for the marked recovery in trade. But such is not the case. The large exportable surplus of wheat will later swell the exports, but as yet they are not responsible for the marked increase in exports generally to other countries.

To lumber, pulp and paper rather the great comeback in exports has been due. At a time when exports of farm products to the United States have been hard hit through the higher duties, and during months also in which some of those for seasonal reasons were not to be had, lumber, pulp and paper shipments have been growing. It is also to be observed that they have kept Canada's exports increasing at a time when exports from the United States have been languishing in spite of the vast credit resources of that country to sustain them.

During the six months ending September the value of pulp and paper exports was $61,469,000, or nearly $7,000,000 more than for the same period last year. It is true that these figures are about $35,000,000 below those for the same months in 1920, when newsprint sold at famine prices. But the importance of the industry in the truest sense is not to be judged by the money value of its exports, but rather by their volume.

Take newsprint for example. During the six months ending September there were exported 9,285,986 cwts. or 2,028,629 cwts. more than during the same months last year, and 1,748,545 cwts. more than in the same period 1920. But whereas the smaller quantity in 1920 was worth only $32,890,000.

The total exports of wood pulp during the last six months were 8,406,992 cwt. as against 4,716,691 for the same period last year, the value having in the meantime gone up from $15,804,000 to $20,173,000. But in spite of this marked increase in this class of exports during the year, they still remain 782,00 cwts. below what they were for the first six months of 1920. The chief point is the extent of the recovery within the year.

It is worthy of note that while exports of pulpwood for the six months ending September were 506,612 cords or 85,000 over those for the same period in 1921, they were 147,000 below those for the same time in 1920 indicating that there is a greater tendency to manufacture the wood in Canada.

Of the total exports of paper within the last months the United States took $31,110,000 out of a total of $36,066,000. Of wood pulp the United States took $15,460,000 out of a total of $20,173,000. Of pulp wood exported to the value of $5,229,000 the United States took it all. Of the total exports of paper, wood pulp and pulp wood, amounting to 61,469,000 the United States took $51,806,000 or 86% as against 83% in 1920. From this it is evident that pulp and paper have had quite a little to do with bringing the Canadian dollar back to par.

"AM I MY BROTHERS'S KEEPER?"

By A. LEIGH HARRIS

Maybe you are not, but can you refuse him a good turn? The rattle-snake, a creature doomed to crawl upon its belly all the days of its life, among the lowest representations of Creation, is fair enough to warm his known enemy, man, before he strikes.

Among us are those who are not so charitable as the rattler is fair, for they do not warn their fellow workmen of caution's necessity in protecting themselves against the dangers of the occupation in which they may be engaged and of which they may be ignorant.

We are now in the days of readjustment when the winds of prudence should blow the chaff away. A foreman should satisfy himself as to the capabilities of new workmen entering his service. If he is inexperienced, while explaining to him the details of his duty, explain to him their hazards. Never put a green or inexperienced man into a place beyond reasonable expectancy in his capabilities to protect himself against the hazards involved. It is here the foreman demonstrates his ability in good organization.

Take it this way! If while engaged in logging, there were received two young skidder horses, fresh from the sales stable, a good foreman would not permit their use to any great extent, until they had passed from what is known as the "soft" to the "hard" stage. This is not "bull," but horse talk; loggers know its meaning. If the foreman observed his skidder crew giving them the full task, the first day out, doubtless there would be some missing faces when the skidder blew next morning. The horse is a lovable animal. God bless the women, horses and dogs, for we love them all, but why overlook the "soft" or "green" workman who should have a horse's consideration? Do not put him in a hazardous place where he will have to "go up in the collar" too strong until he has learned something about the game. It is not fair.

Riding in the great merry-go-round of industry every day, every man in the throng, especially those of experience, can by a word bring into effect greater efficiency in safety, which produces better efficiency in vocation. Geese cackled and saved Rome. Surely they have a goose's qualification for uttering a sound or producing an effort that may save a life or limb. It is the turn due one another in perpetuating the kinship of humanity. Enacting the rules of safety exemplifies a golden rule by which the individual makes strong links in what will become a long chain. Carelessness begets carelessness, while carefulness beget carefulness, and we must daddy one or the other.

Teaching of safety does not intend to foster cowardice. Much to the contrary, for we need our full strength of courage acknowledging that life is full of danger and without it would be void of thrills. Danger of failure in our undertakings; danger of disease, breaking our bones and becoming a charge for the poor house keep our energy in motion. The successful man plays life's game of danger, laughs at her challenge and wins by intelligently using his safety shields of thought; the man with a yellow streak never gets away from the post.

Exemplify the charity of safety. We may not be our "brother's keeper," but we can stand as high in the universe as the thing doomed to crawl upon its belly all the days of its life.

Be as charitable as the rattlesnake is fair.

A man's age is measured not by the years he has but the work he does.

An old maid is one who thinks she missed marriage; a bachelor girl one who thinks she escaped it.

Mitscherich Pulp*

By JOHN E. DALEY

All sulphite pulp, as it originally was made, is now what is known as Mitscherlich pulp, which is pulp made by the indirect process. Various patents were taken out about the same time, in the late 80's for cooking wood in bisulphite liquor. Alexander Mitscherlich's patent was for the purpose of bringing the rosins and lignins in the wood into sulphite. Incidentally he stated in the patent that a whitish fibre remained, for which some possible use might be found. This whitish fibre remaining is the modern sulphite pulp, while the liquor containing the various rosins and lignins in solution is almost wholly a waste product, for which chemists are still seeking some use.

Characteristics

Mitscherlich pulp differs from ordinary quick cook in several essential characteristics, due to the difference in manufacture. In the first place the chips are cut from one to one and a-half inches in length in Mitscherlich pulp, whereas in quick cook pulp the chips are cut from ⅜ to ⅝ in. in length. This means fewer fibres are cut and less sawdust and fine chips are made.

After the wood is put in the digesters in the Mitscherlich process it is steamed for an hour and a half in order to drive all the air out of the digesters and the cells and pores of the wood. When the cold liquor is then allowed to enter the digester this steam condenses and forms a vacuum in the digester and in the chips so that the liquor is throughly drawn into the wood and it is cooked much more uniformly. The liquor is now heated to about 124 degrees cent. and the digester allowed to stand at this temperature for some 20 hours until the wood is thoroughly cooked. As the gas pressure rises during this time this will also raise the temperature at the finishing point to about 130 degrees.

High temperatures do not do paper fibres any good, and the lower this temperature can be maintained the stronger and better the fibre becomes. This is true of cooking, bleaching, beating, or any of the processes through which fibres are put in the making of paper, and the longer time that given to the cooking of the wood by the Mitscherlich process permits a much lower temperature to be used than with the quick cook process.

Difference in Process

The essential difference between Mitscherlich process and quick cook process is that the fibres are cooked in the Mitscherlich process by the same liquor that is put in the digester, not weakened by the addition of any water or condensed steam, as the heat or steam is confined in a lead pipe and does not come in direct contact with the liquor. In the quick cook process the steam is directly blown into digester and mingles with the acid and keeps diluting it so that we must use much stronger acids at the start, much higher temperature and finish the process much more rapidly.

The third essential difference between quick cook and Mitscherlich pulp comes from the emptying of the digesters. In the Mitscherlich process the gas is all blown off, the digesters filled with cold water two or three times in order to make it cool enough to let men shovel it out. Incidentally this cold water process on a hot fibre acts the same as case hardening cast iron and makes the fibre much harder, firmer and stronger. Numerous experiments have proved that the use of hot water, or only one wash, do not give as strong fibres, as when they are thoroughly chilled by two fillings with cold water. Incidentally this does another thing to the fibres which differentiates Mitscherlich fibres from quick cook fibres and makes it possible to recognise them instantly under a microscope.

With quick cook pressure the fibres are blown out of the digester by pressure. Now this pressure is not only all through the digester, but also on the inside of the fibre, which is a little hollow tube, and as this minute fibre is blown out of the digester and comes into atmospheric pressure it invariably ruptures, or either splits open or blows off its ends, whereas in the Mitscherlich digester the pressure is taken off the digester so gradually, as the liquor is run out, this process taking two and a half to three hours, that the fibres retain their original length. This is the reason that Mitscherlich fibres made from the same wood as quick cook fibres are 33 to 59 per cent. longer.

Quick cook fibres average about two millimetres in length and Mitscherlich fibres about three milimetres in length. This characteristic of Mitscherlich fibres makes it work differently in the beater. Fibres with whole ends and not torn or split to pieces will beat or hydrolise much better than parts of fibres. This will be readily seen if one takes fibres such as are made of the ground wood process which are all torn to pieces and compares it with the ordinary quick cook pulp, there being almost as much difference between the workings of some Mitscherlich fibres and some quick cook pulps as there is between some quick cook pulps and the ordinary ground wood. Mitscherlich pulps will, therefore, knit together in a firmer sheet, make it harder and have greater strength than quick cook pulps. The drawbacks of this process are the greater length of time required in cooking, the greater investment in digesters and buildings, and the greater labour expense in filling and emptying digesters, repairing lead pipes in the digesters, etc.

Advantages

Its advantages are a stronger and more uniform pulp and therefore a better paper made of the fibre. There os a place in the world for paper made of the finest linen rags, and a place in the world for paper made from the poorest ground wood, so there is also a place for Mitscherlich pulp, just the same as there is a place for the ordinary quick cook pulps, and it is not to be supposed that one will ever displace the other, or enter the other's field to any large extent, any more than ground wood will drive out rags by reason of its cheapness, or rags will drive out ground wood by reason if its superior fibre.

"MOTHER GOOSE LENDS A HAND"

(Otto L. Anderson)

Old King Coal
Was a merry old soul,
But enemies he had many,
For the people burned wood
Whenever they could,
And saved themselves many a penny.

Now Old King Coal
Has them under control,
And he wears a large smile on his brow,
For the god that kills
Has robbed our hills,
And the trees do not grow there now

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* Paper read at the convention of the American Paper and Pulp Mill Superintendents' Association.

Technical Section

REVIEW OF RECENT LITERATURE

A — Propertis and Testing of Materials

A-.1 The Cellulose Content of Pine Wood. PETER KLASON. **Zellstoff-chemische Abhandlungen,** i, No. 5, 105-114, (1921); **Chem Abs.,** xv, 2722, (Aug. 20, 1921). Cross and Bevan's method cannot be used for the determination of the cellulose content of pine wood. Klason has investigated the action of bisulphite (80 g. of sodium bisulphite and 500 cc. of normal hydrochloric acid made up to 1 liter) for varying periods of time at 100 deg. After 8 days the cellulose reaches a nearly constant value, and, with continued heating, only slowly decreases (1.7 per cent in 3 lays). He finds 53 per cent of cellulose in pine wood. The composition of woods of various ages is also investigated. —A. P. -C.

A-1. Preparatory Work on Forest Investigations Regarding Determination of Resin, Cellulose, and Specific Gravity. H. E. WAHLBERG. **Svensk Pappers-Tid.** xxiv, 108-112, (1921). **Chem. Abs.,** xv, 1991, (June 20, 1921.) The paper pulp office has undertaken an elaborate investigation of different woods with regard to their suitability for paper making, viz., the determination of (1) relation between green and dry weight and the volume, also the bark volume, (2) cellulose content, (3) maximum length of fiber, (4) fat and resin content, (5) water-soluble sugars, (6) pentoses, and (7) lignin content.—A. P. -C.

A-1. Lignin and Lignin Reactions. II. PETER KLASON. **Ber.,** liii (B), 1862-1863, (1920); **Chem. Abs.,** xv, 859-860, (March 20, 1921). By the sulphite process all of the lignin can be extracted from the wood of the Scotch pine, birch, beech, oak, linden, aspen, alder, anl swallow and from the solutions can be obtained yellow cyclic beta-naphthylamine salts of practically the same appearance and by the same methods as from pine.—A. P. -C.

A-1. Constitution of the Lignin of Pine Wood. PETER KLASON, Forstakademie, Stockholm. **Ber.** liii (B), 1864-1873, (1920); **Chem. Abs.,** xv, 860, (March 20, 1921). Compare this journal, xix, 170 Feb. 10 1921. That part of the lignin which contains an acrolein group and whose lignosulphuric acid gives cycic arylammonium salts is designated acrolein-lignin; or alpha-lignin it is identical with the calcium lignosulphnate precipitated by calcium chloride. There is also another lignin in wood whose calcium sulphunate is not precipitated by calciem chloride gives no cyclic ammonium salt, but contains a COOH group; this is called carboxyl-lignin or beta lignin. The composition of beta-lignin can be calculated to correspond to $C_{19}H_{18}O_9$. In the complete extraction of the lignin from kilo of pine wood 79.1 g. of sulphur dioxide and 34.6 g. of lime should combine with the lignin. The results of tests in the industry show that in a hard boiled mass about 76 g. sulphur dioxide and 32 g. of lime are taken up. —A. P. -C.

A-1 Lignin Determination in Lignified Fibers. P. WAENTIG and E. KERENYI. **Zellstoffchem. Abhandl.,** i, No. 3, 65-71 (1920-; **Chem. Abs.** xv 435, (Feb. 10, 1921). The approximate determination of lignin may be carried out as follows: A weighted thoroughly moistened sample in a tared chlorination flask is treated for 5-6 hours with a slow stream of chlorine. The excess of chlorine is removed by a slow stream of dry air and the apparatus again weighed. The increase in weight in per cent is the chlorine number this divided by 140 (the average chlorine number of lignin and multiplied by 100 gives the approximate lignin content of the raw material. — A.P.-C.

A-1. Isolation of Carbohydrates and Determination of Lignin by Means of Chloride Dioxide. E. SCHMIDT and E. GRAUMANN. **Ber.,** liv, 1860-1873, (1921); **J. Soc. Chem. Ind.,** xl, 764A, (Nov. 15. 1921). Unchanged carbohydrates, completely free from incrustations, can be prepared readily from portions of plants by the use of aqueous solutions of chlorine dioxide which have no effect on cellulose, mercerised cellulose, oxycellulose, mannan, xylan, starch, and fungus cellulose. The stability of the carbohydrates towards chlorine dioxide is confirmed by the observation that their components, dextrose, mannose, galactose, levulose, xylose, arabinise, maltose, anl glucosamine hydrochloride do not react with solutions of the gas. The presence of small amounts of incrustation is detected readily by the consumption if chlorine dioxide, and it is thus easily possible to estimate quantitatively the precentage of tissue substance and incrustation n portions of plants. In this manner pine wood (Pinus sylvestris is founl to contain 63.28 per cent of tissue and 36. 72 per cent of lignin whereas Willstatter and Zechmeister found only 27.35 of the latter. The consumption of chlorine dioxide is small amounting in the case of pine to 13.50 per cent of the weight of the wood.—A. P. -C.

A-1. The Cellulose Content of Spruce Wood. PETER KLASON. **Svensk Pappers Tid.,** xxiv, 7 (1921; **Chem. Abs.,** xv., 1991, (June 20 1921). Klason had previously annouced the composition of spruce wood as cellulose 53 per cent, other carbohydrates 13 per cent, lignin 29 per cent, and other substances 5 per cent. From elaborate investigations which he intends to continue he now announces the composition of spruce wood as: cellulose free from pentosans 53 per cent, hemicellulose 15 per cent, lignin 30 per cent, and other substances 2 per cent. Four days' digestion does not give clean cellulose. Most digestions ran 10 to 20 days.—A. P. -C.

A-1. Studies on the African "Da" Hemp (Hibiscus Cannabinus : Its Value for Paper Making F. HEIM L. MATROD and F. MOREAU. **Cull. Office Coloniale.** xii, 247-258, 321-341, (1919); **Chem. Abs.** xv, 2723, (Aug. 20, 1921. This plant yelds a seed containing 17 to 20 per cent of an oil suitable for food and soap making. It has a fiber excellent for cording and sacking, and the fiber yields 55 per cent of a fine grade of paper pulp.—A. P. -C.

A-3. "Falasco" in the Paper Industry. G. L. PAVARINO and G. CASTELLARI. **Staz. Sper. Agrar. Ital.,** liii, 32-46, (1920); **Chem. Abs.** xv, 1808. (June 10, 1921). Falasco is a local name given to certain swamp begetation consisting mostly of **Phragmites communis,** various species of **Carex, Scirpus, Cyperus, Typha** and **Juncus, Schoenus mariscus, Sparganium**

ramosum, Gliceria aquatica and **Sagrittario sagittaefolio. Carex** was not sensibly bleached by several hours' treatment with sulphur dioxide. After being bleached with potassium permanganate it yielded 31. 5 per cent of cellulose. Falasco is consilered a suitable material for paper making.—A. P. -C.,

A-1,-15. Cellulose and Lignin. P. PARKER and F. WIDMER. **Helv. Chim. Acta,** iv, 700-702 (1921-; **J. Soc. Chem. Ind.,** xl, 764A, (Nov. 15, 1921). By the action of acetyl bromide on cellulose in the presence of acetic acid, acetobromocellulose and acetobromoglucose are formed, but in proportions far from quantitative. In this respect cellulose differs from starch, which is quantitatively converted into acetobromomaltose. The reaction permits no decision as to whether cellulose is a pilymeric anhydro-sugar or has a chain structure, since the conditions necessary are too drastic. Wood, straw, and similar materials are completely dissolved by acetyl bromid, and the solutions when treated with ice furnish a mixture of decomposition prolucts of lignin and cellulose. This supports the view that lignin and cellulose are not chemically combined in the wood. — A.P.-C.

A-3 Improved Process for the Manufacture of Esparto Pulp. Fr. Patent No. 118,376. **Papier** xxii, 344-345, (Dec. 1919) ; **Rev. Univ. Papeterie,** (Jan. 15, 1920) ; **Paper,** xxvi, No. 24, 22-23, (Aug. 18, 1920). Translation by A. Papineau-Couture. See**Pulp and Paper,** xviii, 836, (Aug. 5, 1920) ; 917-918, (Sept. 2, 1920). — A.P.-C.

A-12 Increasing the Adhesive Power of Alkali Silicate Solutions. Ger. Patent No. 318, 516, W. DAHSE, Aug. 3, 1918. **J. Soc. Chem. Ind.,** ixl, 517A, (July 31, 1920). Solutions of alkali silicates become very viscous when treated with solutions of zinc and cadmium salts, and the product may be used as an adhesive for paper, cardboard, wood, leather, etc. — A.P.-C.

A-3. Palmyra Palm Leaves. F. HEIM, J. MAHEU, and L. MATRAD. **Bull. de l'Agence Generale des Colonies,** xiii, 801, (1920) ; **Chem. Abs.,** xv 1993, (June 20, 1921). The leaf blades of **Berassus flabellifer** yielded 5.34 per cent ash, 52.5 per cent lellulose, 41.6 per cent lignin and small quantities of wax-like substances. On digestions with caustic soda under pressure it yielded 28.3 per cent of a brown colored pulp which was difficult to bleach. The leaf stalk yielded 1.75 per cent ash, 0.87 per cent fats and waxes, 53.6 per cent cellulose, and 41.6 per cent lignin. Digestion with caustic soda yielded 29 per cent of a pulp which could be satisfactorily used for paper making. —A. P. -C.

A-4. The Effect of Bleaching on the Amount of Alpha-Cellulose in Sulphite Pulp. E. WAHLBERG. **Svensk Pappers Tid.,** xxiv, 92, (1921) ; **Chem. Abs.,** xv, 1991, (June 1921). Unbleached sulphite pulp consists usually of 83 to 85 per cent of alpha-cellulose, 7 to 9 per cent of beta-cellulose, and 6 to 9 per cent gamma-cellulose. Digesting with 2 per cent cacstic soda solution for 5 hours under 5 atmospheres' pressure yields a cellulose consisting of about 94 per cent alphacellulose consisting of about 94 per cent alpha-cellulose 3 per cent beta-cellulose and 3 per cent gamma-cellulose. Eight determinations on 2 samples of unbleached pulp showed that acetic acid increases the percentage of beta-cellulose, that varying the temperature does not appreciably change the ratio of the different cellulose and that very careful bleaching is necessary for a high percentage of alpha-cellulose. —A. P. -C.

A-4; A-5. Analysis of Pulp for Moisture for England. A. FORSELLER. **Svensk Pappers-Tid.,** xxill, 460-462, (1920) ; **Chem. Abs.,** xv, 1992, (June 20 1921). Forseller was sent to England to investigate the cause of so many claims regarding moisture content of pulp imported from Sweden and Finland. He found that though the contracts called for the "Wedge system" of sampling described by Sindall and Bacon, in practice the sampling was far from correct. The pulp had not been protected from rain during transit, and after arrival was stored some indoors and some outdoors. Forseller recommends protection of pulp from water during storage and transportation even drying out of moisture, consultation between the technicians of various plants, standardization of sampling methods, taking of samples by a neutral person and frequent testing of balances and weights.—A. P. -C.

A-4; A-5. Analysis of Pulp for Moisture in England. Svensk Pappers-Til., xxiii 489, (,920) ; **Chem. Abs.** xv, 1922, (June 20, 1921). The author points out that pressing all bales to the same thicness eliminated most of the claims from one plant. Compare preceding abstract.)—A. P. -C.

A-4; A-15. The Chemical Composition and Purification of Wood Cellulose. C. G. SCHWALBE **Svensk Pappers-Tid.,** xxiii, 269, (1920) ; **Chem. Abs.,** xv, 170, (Jan. 10, 1921). In the attempt to make a cellulose from wood to replace cotton and linen fiber it was found that wood cellulose still held incrustants from the wood itself, together with some decomposition products of cellulose. These crusts contained lignin, sugars, and in cellulose from pine wood resinous substances. No exact determination of lignin substances is known, though light is thrown on it by the deepening color caused by sulphur acids and by a stedy of the methyl number. The sugars may be dibided into pentosans anl hexosans. The former can be determined by the ferfural distillation method. There is no satisfactory method for the latter.—A. P. -C.

A-7. Determination of Available Lime in Quicklime and Hydrated Lime. ALICE I. WHITSON. **Chem. Met. Eng.,** xxv, 740, (Oct. 19, 1921). The following modified Scaife method has been investigated by the Bureau of Standards. Place 1.b g. of the carefully prepared and finely ground (passing through 100 fesh) lime in a 400 cc. beaker, add 200 cc. of hot water, cover, heat carefully, anl then boil for three minutes. Cool, wash down cover, add two drops of phenolntholein and titrate with normal hydrochloric acid. adding the acid dropwise as rapily as possible and stirring vigorously to avoid local excess of acid. When the pink color disappears in streaks retard the rate of addition, somewhat, but continue until the pink color disappers entirely and does not reappear for 1-2 secs. Note the reading and disregard the return of color. Repeat the experiment substituting for the 400 cc. beaker a 1 liter graduated flask carrying a one-hole stopper fitted with a short glass tube drawn out to a point. Cool and add dropwise and with vigorous stirring 5 cc. less acid than before. Call the number of cc. used **A.** Grind up any small lumps with a glass rod flattened at one end, dilute to the mark with freshly boiled distilled water, close the flask with a solid stopper, mix thoroughly for 4 or 5 minutes, and let stand half-an-hour. Pipette a 200 cc. portion, add phenolphthalein, and nitrate slowly with half-normal hydrochloric acid until the solution remains colorless on standing one minute. Call this additional number of cc. **B.**

PULP AND PAPER NEWS

Mr. W. Gorman, Montreal, Eastern Sales manager of the Provincial Paper Mills, Limited, sails from Vancouver on the 24th inst. for an extended visit to Australia and New Zealand. The object is to consult with the Australasian representatives, Carmichael and Company, Limited, with a view to extending the export business of the Provincial Paper Mills, Limited. The company have at present a substantial connection with Australia, but it is felt that there may be opportunities to adding to it, especially in view of the negotiations for a preferential tariff with Australia. Mr. Gorman will visit the principal cities of Australia. In his absence, Mr. A. Jewett will look after the company's interests in Montreal. Mr. Gorman has been connected with the Provincial Paper Mills, Limited for about 14 years.

The newsprint production of the St. Lawrence Paper Mills, Limited, Three Rivers, will be marketed by the St. Maurice Sales Company, New York and Montreal.

The Lieutenant Governor of the Province of Quebec and Lady Fitzpatrick announce the engagement of their daughter Alice to Mr. Robert P. Kerman, manager of the Donnacona Paper Company, Limited, Quebec.

Mr. H. W, Cressy, vice-president of the St. Maurice Sales Company, Limited, New York, visited Montreal last week.

The "Moncton Transcript" has been taken over by a new company, with a capital of $99,000. The incorporators are the Hon. C. W. Robinson, Minister of Lands and Mines, in the Provincial Government, Mr. M. Lodge and Mr. I. C. Rand.

A very attractive bit of advertising has been gotten out by the Rudd Paper Box Company, Limited, Richmond Street, west, Toronto, in the form of a folder illustrating many of the well-designed packages produced in their factory and which are seen in Canadian stores. The "Fifth Use" boxes are prominently shown, together with boxes de lux. The service department of the company was organized for the purpose of investigating the conditions governing the sales of packageable goods and the results of these investigations are being placed at the disposal of the company's patrons and prospective customers.

The disposition of waste paper came in for a good deal of discussion at the last meeting of the Management Committee of the Toronto Board of Education, when it was decided to recommend that the sale of blank books and used work paper and books be left in the hands of the principals, and the proceeds paid into school funds.

The United Carbon Paper Manufacturing Company, Limited, has been organized in Toronto and has been granted an Ontario charter authorizing the company to engage in the manufacture and sale of stationery supplies of all kinds. The authorized capital if $50,000 and among the incorporators are S. A. Hayden, A. E. Knox, E. McGrath, E. L. Middleton, F. Morrow and T. L. Monohan.

It is learned through a Toronto legal firm who were acting in the matter that the suit of Mosse vs the Armstrong Forest Products Company, of Johnsonburg, Pa., in which the defendants were used for non-acceptance of pulpwood, has been settled by the withdrawal of the action.

Work on improvements to the Abitibi Power and Paper Company's property is progressing satisfactorily. The building of the railway from Hughes to the river is well along and the steel is now down to within a mile of the water. The trestle to join the steel on top of the hill and the bridge is now being built and will require another ten days to complete. It is expected that before Christmas the first logs will have been brought down to the mill from up the line.

Word received in Toronto is to the effect that the Westminster Paper Company at New Westminster, B. C. expects to be in operation on the manufacture of tissues and toilets within five or six weeks. The paper machine is now being installed. The promoter of the enterprise is J. J. Herb, formerly superintendent of the Interlake Tissue Mills, Limited, at Merritton, Ont.

S. F. Duncan, Secretary of the Provincial Paper Mills, has returned to Toronto after a week's visit to company's new paper mill and ground wood mill now nearing completion at Port Arthur. The paper mill is now practically completed. The heat and sprinkler systems have been tried out and the boiler house extension is about finished. The equipment for the ground wood building which is now finished is being installed, including two grinders and screens. It is expected that the paper machine will be shipped this month. Mr. Duncan states that if nothing untoward occurs the plants will be in operation early in February. Building operations were commenced in May of this year and the company is well satisfied at the rapid progress that has been made.

I. H. Weldon, head of the Provincial Paper Mills, Limited, Toronto, was summoned to St. Thomas a few days ago to be present at the bedside of his mother, Mrs. James Weldon, who is seriously ill as the result of a fall. Mrs. Weldon is over ninety years of age.

The congratulations of a host of friends were extended to John F. Ellis, of the firm of Barber, Ellis & Company, Limited, stationery and envelope manufacturers, Toronto, on Nov. 9, the occasion being his 77th birthday. Mr. Ellis, who is the Honorary President of the Canadian Paper Trade Association, was reminded of the fact of his birthday when early in the morning a beautiful bouquet of roses was delivered at his residence, 81 Wellesley Street, the gift of the commercial stationers of Toronto, accompanied by an illuminated address. Mr. Ellis is the oldest stationer in Toronto and is known throughout the province by the printing and publishing fraternities.

Major P. B. Wilson of the Spanish River Pulp and Paper Mills, Limited, is on his way back to Canada via the SS. Empress of France after six weeks spent on a combined business and pleasure trip to Europe.

The anouncement was made last week that Peter Nesbitt who for the past several months has been the superintendent of the Lincoln Paper Mills, had resigned his position. He has been succeeded by Thomas Legge, who was formerly connected with the Ticonderoga Pulp and Paper Company and who is widely known in pulp and paper manufacturing circles generally.

Dunbar Hudson, of the Hudson Paper Company, Winnipeg, was a visitor in Toronto last week. Mr. Hudson was in Ottawa attending a family reunion in honor of his mother who has reached the advanced age of seventy-five years.

E. H. Wilkinson, of the Wilkinson Paper Co., Limited, Wellington Street, Toronto, has gone on a business trip to Prince Edward Island.

G. W. Pauline, assistant managing director of Ritchie and Ramsey, Limited, paper coaters and dealers, Wellington Street, Toronto, has returned from a business trip to the Canadian West.

Revenue from the Ontario Department of Lands and Forests, presided over by Hon. Beniah Bowman, exceeded, during the fiscal year now closing, all previous records. Accounts just closed in the department show that the total revenue from lands and forests in Ontario has been $4,400,000 as compared with last year's revenue of $4,035,000, which, at that time, also constituted a record. As the close of the fiscal year is yet some days off exact details of the revenue total are not as yet available. The biggest source of income undoubtedly was in the sale of timber and pulp limits, of which 626 square miles have been disposed of during the year, the largest being an area of 81 square miles, sold recently in Sherlock township.

Col. Thomas Gibson, of the Spanish River Pulp and Paper Mills, Toronto, has returned from a business trip to New York.

Jalmar Yalto, a Finlander, was killed on Nov. 10 at the pulpwood camp of C. W. Cox on Black Bay Peninsula. The body was taken to the deceased's home at Port Arthur. The accident was the first of a fatal character on the property.

PAPER AND PULP EXPOSITION APPROVED

Endorsement in principle of a paper industries exposition, to be held at the time of the next annual convention of the American Paper and Pulp Association was voted at a meeting of the executive committee of the Association held since the Chicago meeting. For nearly two years this question has been quitely considered, since it was first broached to the Association by Dr. Hugh P. Baker, Executive Secretary, but the business depression prevented further steps being taken. At the Chicago meeting, however, sentiment was so much more optimistic, that it was thought that it might be an opportune time in 1923 to hold such an exposition.

The general plan of such an exposition would be the holding of a show devoted chiefly to paper making machinery and supplies, for the benefit of the paper manufacturer who wishes to improve or add to his equipment, but also would be of an educational nature, to give the public an opportunity to understand the problems involved and the nature of the machinery required for the making of one of the products most commonly used by every individual, but whose processes of manufacture are little known.

No exhibits have been allowed in the hotels where the Association conventions have been held, but this exposition would concentrate under one roof and in orderly form all types of paper making equipment which would interest the manufacturer.

As the proverb says, "The early bird gathers no moss."

PECULIAR CIRCUMSTANCES CAUSED DEATH

A verdict of accidental death was returned on November 7th inst. by the coroners's jury which enquired into the cause of death of EMMETT ALLAN, at the Lincoln Sulphite Mill, Merritton, Ontario. The verdict of the jury stated that Allan met death by suffocation from sulphur dioxide gas on Thursday, November 2nd. The jury further found that no negligence could be attached to those in charge of the work.

A. G. NATWKICK, superintendent at the Lincoln Sulphite Mill, produced a plan of the mill, showing the three towers. Two acid towers are utilized in the making of acid, the third being the recovery tower.

On the 2nd of November the recovery tower was out of commission and had been disconnected in order to remove the wooden checker work lining to repair a leak.

Allan descended into the recovery tank to remove the woodwork. Mr. Natwick was not present at the time of the accident but when he arrived he was notified. He later saw the break being at the joint of the lead and iron parts of the exhaust pipe from the acid tower. This steam pipe was connected in such a manner that the escaping steam created a suction at the bottom of the pipe drawing out the spent sulphur dioxide to the atmosphere. When the steam pipe broke the rising gas instead of going out to the open air through the pipe was free to rise up and out through the open man hole in the top of tower. Whereas ordinarily this gas would have risen upwards in the air it went over and downwards, due to peculiar atmospheric conditions at the time, into the open manhole of the recovery tower where Allan was working.

When Natwick arrived he enquired for Allan and was told he was in the recovery tower. Upon investigation he noticed gas in the tower, water was turnd on full in the two acid towers to prevent as far as possible the rising of the gas, making it considerably weaker. The Superintendent and three other men went to the top of the tower on the elevator to cover the manhole to prevent the entry of any more gas. When finally the gas was weak enough to allow a man to descend in the recovery tower, Allan was found lying face downward on the checkerwork of the tower.

A doctor had been summoned and arrived at the mill in time to see Allan removed from the tower. He had the man taken to the General and Marine Hospital St Catharines, where a pullmotor was used, but without success.

The peculiarity of the accident lies in the extraordinary combination of events, namely, the repairing of the tower, the breaking of the steam pipe and the peculiar atmospheric conditions existing at the time.

WHO LOSES THROUGH ACCIDENTS?

The Workman

Loses limb and sometimes life.
Loses time and wages.
Loses earning power.

The Wife

Loses her husband.
Loses support for her children.
Loses comfort and happiness.

The Child

Loses the guidance of his father.
Loses the chance to get an education.
Loses an opportunity to learn a trade

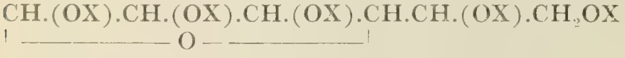
The percentage of available lime is 2A + 5B. The method has given results very close to those obtained by calculation from complete analyses of high-calcium and high-magnesium quick and hydrated limes.—
A. P. -C.

A-15. Hydrolysis of Cellulose. Y. KAUKO. **Naturwissnsch.**, ix, 237-238, (1921); **J. Soc. Chem. Ind.**, xl, 765A, (Nov. 15, 1921). Saturation of moist cellulose with gaseous hydrogen chloride in the cold yields a thick solution which remains almost colorless on standing for 40 hours, after which period its reducing power corresponds to about 40 to 60 per cent of the theoretical yield of sugar. According to the duration of the treatment other substances are also formed which prodcce dextrose on heating in an autoclave. At 13 degrees C. a 90 per cent yield of sugar can be obtained in 4 hours, but above this temperature dark decomposition products are formed. It is probable that cellulose forms addition products with hydrochloric acid. The treatment described could be applied for the determination of cellulose.—A. P. C.

A-15. X-Ray Spectroscopic Investigations on Cellulose. R. O. HERZOG and WILLI JANCKE. **Z. Physik.**, iii, 196-198, (1920); **Chem. Abs.**, xv, 983. (April 10, 1921). The authors show that cellulose has a definite crystal structure when examined by the X-ray method developed by Hull and Debye and Scherrer. The cellulose has the same structure, which is rhombohedral, when obtained from different materials.
—A. P. -C.

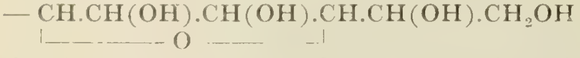
A-15; K-O. Non-Rusting Metals for Paper Manufacturers. Svensk Pappers-Tid., xxiii, 192, (1920); **Chem. Abs.**, xv, 172, (Jan. 10, 1921). Probably no rusting and erosion as the paper industry. Iron rust and iron salts cause the greater damage in paper making. The substitution of aluminum sulphate (paper makers' alum) for mineral alum has increased the trouble. The different kinds of acid resisting irons and non-rusting steels are compared and paper manufacturers are urged to substitute these for the more expensive non-ferrous metals now used in the paper machinery.
—A. P. -C.

A-15. Constitution of Cellulose. K. HESS. **Acetolysis of Ethyl-Cellulose.** K. HESS and W. WITTELSBACH. **Z. Elektrochem.**, xxvi, 232-251, (1920); **J. Soc. Chem. Ind.**, ixl, 512A (July 31 1920,. It is suggested that the molecule of hydrocellulose, for which the name "cellulose" is now suggested, consists of a dextrose ir a cellobiose molecule in which the OH groups are etherified by dextrose or cellobiose residues. Of the various possibilities, the formula



$$\underbrace{\mathrm{CH.(OX).CH.(OX).CH.(OX).CH}}_{\mathrm{O}}\mathrm{.CH.(OX).CH_2OX}$$

in which X represents the residue



$$-\underbrace{\mathrm{CH.CH(OH).CH(OH).CH}}_{\mathrm{O}}\mathrm{.CH(OH).CH_2OH}$$

is in closest agreement with the proportion of cellobiose acetate (6.2g.) and pentacetyldextrose (12 g.) obtained from cellulose (10 g.) by acetolysis. The marked difference between cellulose and its derivatives is accounted for by considering such derivatives to be derived from the above formula, whilst cellulose consists of a number of such molecules, united through residual affinities of OH groups. The disintegrating effects of acids, alkalis, or zinc or copper and ammonium compounds is due to their competiton for these residual valences. It is also suggested that the physical characteristic of cellulose as a hollow fiber is reproduced in the arrangement of the cellulose molecules in the cellulose complex, and that this complex may be broken down by mechanical means; e. g., in the case of cellulose which has been subjected to prolonged beating or grinding; the product thus obtained represents a stage of disintegration approaching the less profound of those produced chemically. Similar considerations may apply to the molecules of hemicelluloses, protein, and caoutchouc.—A. P. -C.

A-15. Prolonged Action of a Moderate Heat on Bleachel Cotton and Other Cellulose Materials. E. KNECHT. **J., Soc. Dyers & Col.**, xxxvi, 195-198, (1920); **J. Soc. Chem. Ind.**, ixl, 540A, (Aug. 16, 1920). All the materials tested were exposed at 93 degrees C. Bleached cotton yarn and bleached calico, on clock glasses, remained unchanged for the first few days and then turned greyish brown with formation of oxycellulose. At the end of 336 hours the cotton yarn has decreased in strength 33 per cent. When exposed in sealed tubes, yarn decomposed slightly and lost 50 per cent of its strength, and had a remarkable shrivelled appearance. Other cellulose materials (bleached linen and viscose silk, wood and filter paper) gave similar results.—A. P. -C.

A-15. Purification of Celluloses. Action Of Alkaline Earths on Their Incrustations and on Hydro-and-Oxy-Celluloses. C. G. SHWALBE and E. BECKER. **J. Prakt. Chem.**, c, 19-47, (1919); **J. Soc. Chem. Ind.**, ixl, 512A, (July 31, 1920). The action of the hydroxides of calcium, strontium and barium and of magnesium oxide on a certain number of hydro-and-oxy-celluloses has been investigated, the experiments generally geing carried out at the boiling points of the solutions, under the ordinary pressure. Under these conditions, hydro-and oxy-celluloses behave as mixtures of celluloses and their degradation products. In the cases of hydro-celluloses from cotton and from wood, the degradation products are present in amounts varying from about 24 to 36 per cent. Oxy-cellulose prepared by the action of bleaching powder contains about 60 per cent pure cellulose and 40 per cent of apparently oxidised hydration products. Sulphite celluloses contain celluloses-dextrins, either from the orginal material or formed during the process of boiling; these can be removed by boiling with lime. A variety of cellulose which is practically without reducing power is obtained by the action of milk of lime on sulphite celluloses or on hydro or oxy-celluloses. Treatment with lime dissolves but little from soda celluloses, since any cellulose-dextrins which may be present are dissolved during the boiling with alkali. Products which are closely similar to cotton celluloses are readily obtained by the treatment of wood celluloses (and especially bleached sulphite pulps) with milk of lime. The material is woolly in appearance and touch, and in the form of paper, has a greater absorptive capacity than the untreated material.—A. P. -C.

B.-Forestry

B-4; C-2. Manufacture of Ethyl Alchol from Food Waste. E. C. SHERRARD, U. S. Forest Service Madison, Wis. **Chem .Age, (N. Y.)**, xxix, 76-79, (1921); Chem. Abs.. xv, 1372, (May 10 1921). Saw dust and other mill waste fsom soft woods may profitably be converted into ethyl alcohol where the supply of waste is uniform and constant for a period of 20 years or more, and where there is a good supply of water and a fairly close source of sulphuric acid and lime. Assuming a yield of 20 gallons of ethyl alcohol per ton of wood as obtained by two plants in operation, the cost of 95 per cent alcohol in a plant of 3600 gallons daily capacity is estimated at $0.247 per gallon. Complete figures are given based on continuous operation using 180 tons of dry wood per day. A minimum production of 1500 gallons is necessary for successful operation. The process consists in the digestion of the shredded waste with dilute sulphuric acid at 115 to 120 pounds, converting 20 to 25 per cent of the dry wood into sugars, leaching out, neutralizing with milk of lime, fermenting 96 hours and distilling with standard equipment.—A. P. -C.

E.-Acid Pulp Processes and Equipment

E-2. Incrustations in Heaters and Evaporators in the Evaporation of Sulphite Liquids. R. W. STREHLENERT. **Svensk Pappers-Tid.**, xxiii, 190, (1920). **Chem. Abs.**, xv, 172, (Jan. 10, 1921). Sulphite liquor is one of the hardest liquids to evaporate because of the calcium salts deposited. Attempts to prevent the deposit of precipitated salts by rapid circulation of the liquid failed. The production of insoluble subtances in the scale seems to be due to the chemica reaction taking place in the liquid during heating. Prevention of such reactions may prevent formation of scale. The incrustation from sulphite liquor consists mainly of calcium sulphate and sulphide; smaller amounts of calcium sulphite, silica, and organic substances are present. The first named is probably due to the oxidation of the sulphurous acid. It is therefore better to use neutralized liquor. Sodium bicarbonate has been used successfully, for the resulting salts are soluble. If the liquor containers are kept full or the walls above the liquor are kept moist, there is less scale. Passing an electric current through the container was studied with promising results.—A, P. -C.

E-2. Evaporation of Sulphite Waste Liquor. H. BERGSTROEM. **Papir-Journalen**, viii, 34, (1920); **Chem. Abs.**, xv, 1993, (June 20, 1921). The compression method when using electric energy instead of coal for evaporation of sulphite waste liquor not only saves fuel but also construction and operation costs; it also yields acetic acid and undecomposed organic compounds.—A. P. -C.

E-2 Cymene as a By-Product in the Sulphite Process. O. ASCHAN. **Zellstoff-chem. Abhandl.**, i, No.3, 73-76, (1920), **Chem. Abs.**, xv, 435, (Feb. 10, 1921). Hintikka observed that 2-cymenasulphonic acid, upon treatment with concentrated nitric acid, yields p-nitrololuene-o-sulphonic acid, with the splitting off of the iso-propyl group, from which true azo dyes can be prepared. Upon nitrating under definite conditions, 2, 6-dinitro-cymene is formed, besides 2, 4-dinitro-toluene, which upon further nitration yields trinitro-toluene. Upon reduction the corresponding amine be prepared. Cymene-sulphonic acid may also serve for the preparation of thymol and carvacrol. The cymene yield is calculated to be 1 kilo per ton of pulp. In the sulphite process it is obtained 90 to 95 per cent pure. —A.P.-C.

E-2 Observations on Sulphite Waste Liquor. P. WAHLBERG. **Svensk Pappers-Tid.**, xxii, 257 (1919); **Chems. Abs.**, xv, 171-172, (Jan. 10, 1921). Solid substances are not precipitated from sulphite waste liquor of 35 degree Bé. by fine sodium chloride, though precipitation occurs in less concentrated solutions. Four g. sodium chloride is the smallest amount which will precipitate one g. of sodium chloride-free sediment from a liquor containing about 40 per cent of solids. The precipitated organic substances diminish with the increase in the sulphur dioxide content of the liquor. Substances containing sulphur can be obtained by dialysis using collodion as the film. A combination of spectroscopic analysis and titration analysis has been devised for the colored solution obtained by dialysis. A.P.-C.

E-1. Methyl Red as an Indicator in the Titration of Sulphite Liquors. PER ROSENLUND. **Zellstoff. chem. Abhandl.**, i, No. 5, 121-123, (1921); **Chems. Abs.**, xv, 2723, (Aug. 20, 1921). Methyl red may be used as an indicator in the modified Hohn method for the titration of fresh sulphite liquor. — A.P.-C.

E-5 F-5 Digesting Cellulose under High Pressure and Low Temperature. Papir-Journalen, vii, 184-185, (1919); **Chem. Abs.**, xv, 1922, (June 20, 1921). Instead of digesting wood with an alkaline liquor under 6 to 10 atmospheres and at 150 to 180 degrees, or with sulphite under 3 to 6 atmospheres and at 115 to 140 degrees, it is suggested to put the wood and liquor in the digester, and increase the pressure by pumping in liquor; air on gases to as high as 50 atmospheres. The digestion then takes place at a low temperature and gives a stronger cellulose. Thorough impregnation of the wood by the liquor may be assisted by vacuum. — A.P.-C.

E-0 F-0 New Institute for the Chemistry of Cellulose at the Technical High School at Darmstadt. Svensk Pappers-Tid., xxiv, 174, (1921); **Chem. Abs.**, xv, 2546, (Aug. 10, 1921). Announcement is made of the opening of a new separate institution for chemical research on problems connected with the manufacture of paper pulp. This institute is made a part of the Technical High School in Darmstadt and follows the lines laid down by the Committee of the Society of Swedish Paper and Cellulose Engineers. — A.P.-C.

E-0 F-0 The Heat Problem in the Cellulose Industries. G. SUNDBLAD. **Svensk Pappers-Tid.**, xxiv, 148-158 (1921); **Chem. Abs.**, xv, 2546, (Aug. 10, 1921). The author has studied two sulphite and one sulphate plants and presents in much detail the manufacture use, loss and saving of heat in the processes. He gives his results in 28 full diagrams and charts. His diagrams of a sulphite plant and of the old and new systems for sulphate plants are particularly commendable. Enthusiasm for this problem may easily lead to misdirected effort. A wise installation of heat-saving devices may easily wipe out the necessity of importing fuel into Sweden. — A.P.-C.

E-0 F-0 R-5 The fuel Question in the Cellulose Industry. G. SUNDBLAD. **Svensk Pappers-Tid.**, xxiii, 375, (1920); **Chem. Abs.**, xv, 435, (Feb. 10, 1921). The author reviews various devices designed to reduce the amount of fuel needed for power, for digesting, for driving and heating in the cellulose industries during 1900 to 1922. Figures for each five years show a regular decrease in the amount of fuel needed in the sulphite and sulphate plants. — A.P.-C.

E-0 F-0 Saving Heat in Pulp Mills. Communication from the Paper Pulp Office. **Svensk Pappers-Tid.**, xxiv, 30-313, (1921); **Chem. Abs.**, xv, 1993, (June 20, 1921). In order to avoid waste of heat it is suggested that for each part of a wood pulp plant simultaneous and accurate measurements be made of all the energy and material required, the amounts used, and the amounts lost. The waste heat from one department should be transferred to another department with as little loss as possible. Data from different plants should be collected and compared confidentially. — A.P.-C.

UNITED STATES NOTES

Col. Henry S. Graves, Dean of the Yale Forestry School and formerly Chief Forester of the United States, spoke last Thursday at the conference of the Empire State Forest Products Association and the New Yor Section of the American Forestry Association at the Empire State Forest Products Association and the New York Section of the American Forestry Association at the New York State College of Forestry, Syracuse University. A report which embodies results of a careful examination and investigation of forestry conditions of New York State will become part of the data which the Forest mulating remedical and regulatory legislation on forest management in the United States.

Charles R. White, secretary of the Box Board Manufacturers' Association and the Eastern Paperboard Manufacturers' Association, declares that boxboard manufacturers are being seriously affected by the short supply of waste paper and the steadily mounting cost of such material. He attributes the greatly increased price of waste paper not only to the increased demand by the mills but also to the scarcity of common labor which is used in the sorting of the paper by the second hand junk dealers. The price went up more than 100% from July to September.

The plant of the Phil-Fibre Box Board Mills, Inc., at Philadelphia, Pa., was visited by a spectacular fire last week. A two-story warehouse was completely gutted, and much greater loss might have been sustained but for the assistance of three fireboats. Thirty men who were at work in the building when the fire was discovered were able to make their way out uninjured. David Newman and Chester F. Simmons, owners of the plant, could not account for the fire's origin, or could they give an estimate of the damage.

In developing hydro-electric power on the Oswegatchie River in Northern New York a wood-stave pipe is being constructed twelve feet in diameter and more than two-thirds of a mile long. The staves are of Douglas fir brought from the State of Washington. They are 3½ inches thick and are able to sustain a head of water of 140 feet.

Board mills in Monroe, Mich., are all running full time. Several are so fully booked with orders that there is talk of putting on extra help for Sunday work. About 3500 hands are being kept busy on shifts covering 24 hours a day.

Norbert A . Considine, president of the Paper House of Pennsylvania, has returned to Philadelphia following an extensive business tour of the South. He found that the South's demand for import newsprint is really larger than present stocks on hand of such paper made possible of fulfillment.

Recently issued census statistics of the lumber industry for 1919 show that the total number of establishments in the United States, including pulp and paper and other wood utilizing industries is over 40,000. The persons employed number about a million and the value of the product of these industries amounts to nearly $4,000,000,000. In wood-pulp products the State Maine still with 94 mills and the consumption of 1,279, 852 cords. New York is next with 84 mills and 1,055,000 cords. Wisconsin is third with 47 mills and 854,000 cords. The Southern States, including the so-called North Carolina pine States-North Carolina, South Carolina and Virgina-lead the country in the total lumber production. Of the total of 34,552,000,000 feet of lumber produced in the entire country, The Southern territory produced 16,000,000,000. The Pacific States turned out about 9,000,000,000 feet. The Southern territory was also in the lead about ten years ago. Twenty years ago the Southern group was not quite at the head of the column of lumber producing regions, being led by the Lake States with a small margin. From present indications it appears that the Pacific States region will take the lumber leadership this year to hold it indefinitely.

Acording to a consular report from Costa Rica, tin or cardboard boxes intended solely for the packing of ground coffee for export are made exempt from any import duty in Costa Rica by decree of September 26. The wharfage duties, however, will still be collected. The containers must be marked or stamped to prevent their use for any other purpose.

Operations have been resumed at the Forest Paper Company's mill at Yarmouth, Me., which has been shut down since last March. Previous to that time the mill was only running on part time and with but part of its full quota of employees, and a reduction in wages from a previous scale was in force. A new and better scale of wages has been decided upon which, it is said, will make up for the reduction previously made and will equal, if not exceed, the wage paid about two years ago.

Thomas Caslin, a chaffeur, employed by a firm engaged to haul newsprint paper, was arraigned last Friday in the Kings County Court, Brooklyn, on an indictment charging grand larceny. Alfred Noble, achecker, was also indicted. Noble, Caslin and a third man, not named, are alleged to have diverted and sold truckloads of newsprint paper belonging to the Star Company, publishers of the New York American to the Amalgamated Paper Company, in Brooklyn.

The two mills of the Marinette and Menominee Paper Company operated the entire month of October without a lost time accident. The company's bulletin board shows 35 days without an accident.

At a meeting of the directors of the Carthage Sulphite Pulp Company in Watertown last week J. V. Baron Vice-President and general manager of the Sherman Paper Company, was elected president to fill the vacancy caused by the death some months ago of James A. Outterson. Dr. David S. Balmat, vice-president and active head since the death of Mr. Outterson, tendered his resignation after having sold his entire holdings in the company. Guy C. Jones was re-elected secretary and treasurer, Lyman Rhodes, a vice-president of the Equi able Trust Company of New York, was named vice-president to succeeded Dr. Balmat, and P. H. Moran a paper maker of broad experience, was elected as gener al superintendent of the mill.

Frank L. Moore of Watertown, N. Y., has just been elected president and general manager of the Unite States Pulp Products Corporation, Newark, N. Y. Mr Moore was for many years president and general manager of the Newton Falls Paper Company, Watertown.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, November 14. — From the local standpoint, the paper trade is fairly good. The jobbers report that the demand is being well sustained, and that appearances point to good business for sometime. The printing business is, on the whole, of a dull character; some shops are busy, but others have little work in hand. Competition is very keen, and in the desire to obtain orders, some printers are taking jobs at or below cost.

Taking a more general view of the paper trade, advices from the mills are to the effect that the orders in hand are satisfactory, and that in some directions, shipments are behind.

Canadian commercial conditions point to an expansion of operations, provided that world politics are not upset by the situation in the Near East. The Dominion is looking more and more to outside buyers for her products, which means that political considerations beyond her own shores will have an increasing influence on Canadian trade. The visits of Mr. C. Howard Smith, president of the Howard Smith Paper Mills, Limited, and Mr. W. Gorman, of the Provincial Paper Mills, Limited, to Australia and New Zealand show that our paper manufacturers are realizing more fully the importance of export business in lines outside newsprint, which is taken care of in another way, and for which the chief demand is just beyond our boundaries. No doubt the competition in Australasia, for instance, is very keen, but the fact that we already have a substantial trade with our sister Dominions is evidence that Canada is able to supply those markets at competitors prices.

The newsprint situation is practically without change. The demand is still very good with indications of a heavy consumption during the early part of next year. The policy of advancing the price to a moderate degree is proving the right one, judging from the amount of tonnage placed, and the absence of complaints as to the new price. It is probable that decreased consumption would have resulted from an addition of $10 to the price. The car situation has considerably improved. The Canadian mills and their American customers cooperated with a view to secure the return of cars held by American railways. These efforts proved successful, enabling our mills to ship much more promptly. In fact it has been complained that the pulp and paper companies have received preferential treatment in the matter of cars. The situation however is better all round.

In other lines orders are coming in freely. The board mills are still busy, with prices sustained on account of the strong market for raw materials. Waste paper commands high prices; rags are firm; while roofing felts are down from $2 to $3 per ton, the keen competition for business being responsible for this cut.

The pulp section continues very firm. Groundwood has advanced to $40 with buyers for all production. Mechanical pulp is indeed coming into its own, after a considerable period of dullness. Sulphite is the weakest spot in this department, the large Scandinavian exports to the United States having had a restraining influence on Canadian pulp. On the other hand, bleached sulphite is being sold as fast as it can be manufactured. Inquiries from outside the American continent have been turned down, owing to lack of pulp.

The pulp and paper companies in the St. Maurice Valley will cut heavy supplies of pulpwood this season in order to replenish stocks at their mills which have been considerably depleted in consequence of the big demand for newsprint. Camp operations however, will prove more costly than was at first anticipated, owing to the rise in wages.

Toronto Markets

That the pulp and paper trade is gradually improving its position and that more business is being done today both by manufacturers and distributors than for a long time past is a fair representation of conditions in the Ontario field as gleaned from paper makers and jobbers. Pulp mills and the paper manufacturing plants for the most part are running full with orders booked for a considerable period ahead, while the jobbing trade expresses keen satisfaction at the volume of business being done. There is a slight dulness in the printing trade in Toronto but this does not characterize the printing trade as a whole as is indicated by the fact that jobbers are disposing of large quantities of paper to the trade throughout the province. In all departments of the pulp and paper industry there are signs that prosperity—if not actually here—is well on the way and many branches of the trade are laying plans for future development to keep pace with the expansion of business which seems bound to come.

PULP. — Latest pulp quotations indicate a general upward tendency in prices with all lines in good demand. Unbleached sulphite is now selling at $70 delivered, with bleached sulphite at $100 f.o.b. manufacturers' point. It is stated, however, that bleached sulphite has been sold recently at as high as $110. News grade is selling at $55 and kraft pulp at $65, with 4½ cents a pound as the prevailing price for soda pulp.

BOARDS. — With very little American board coming into the country, the Canadian board mills are running at full capacity and distributors report difficulty in getting shipments. The paper box industry, which is extremely busy, is using considerable quantities of the mill output and the product generally is in excellent demand. Prices remain firm with chipped board selling at $65: Straw board at $65; white vat-lined at $75; folding pulp at $90 and white patent coated at $190.

RAG AND PAPER STOCKS. — Cotton rags are holding firm, although there is no great movement, while waste paper lines are active in practically all departments. Roofing rags are moving quietly at about the same price levels as quoted last week. In paper stocks there has been a slight increase in price in heavy books and magazines, the prevailing price bieng $2.50 as against $2.25 last week. Ledgers and writings are quoted at $2.75 as against $2.50 last week, and No. 2 miscellaneous are off 15 cents, being now quoted at $1.00. Cotton rags are selling at $4 for No. 1 white and roofing rags at $1.25. Blue overall cuttings are quoted at $6 instead of $5.50, while other prices are unchanged from those of last week.

ONION SKIN. — A raise of ten per cent in the price of onion skin went into effect last week according to advices received by Toronto jobbing houses, making the present price $1.35 per folio ream. There is a fair demand for this class of paper.

BLANKS. — There have been considerable importations of blanks during the past few weeks and jobbers report a fair business in this line. Prices remain on a level with those fixed some time ago and it is predicted that any changes that may come into effect shortly will have an upward trend.

TISSUES AND TOILETS. — There is a good steady volume of trade in these lines and both the mills and the jobbers are busy. Orders generally speaking, are not large in bulk, individually, but the total business being done is considered very satisfactory. It is expected that the prices recently scheduled will remain for some time to come although manufacturers point out, that raw materials are steadily rising in price.

GREASEPROOF.—There is a fairly active movement in this class of paper and manufacturers are busy despite the fact that there is considerable foreign competition. Bleached glassine is selling at from 15 to 16 cents per lb. with unbleached at 14 to 15 cents.

COATING MILLS. — The coating mills report a fair amount of business with generally improving conditions. So far the industry has not felt the effect of the upward trend of prices in papers and there have been no increases of late.

NEW YORK MARKETS

New York, November 11. — (Special Correspondence) — As the end of the year draws near, bringing with it a stimulation of retail trading during the pre-holiday season demand for most kinds of paper is showing constant expansion. Much of the excitement that prevailed in the market sometime ago or when trade began to take on a livelier complexion has disappeared, but in quieting down the situation has lost none of its strength nor has business stopped growing. There is a more orderly market condition now, business is proceeding along stable lines with the market tone exhibiting increased healthiness day by day.

Paper of practically all kinds is moving into consuming channels in large volume. One of the gratifying features of the market is that all grades of paper are sharing in the trade activity; that consumers in various industries are purchasing paper, and that no one branch of the trade stands out in point of activity from the others unless it be the newsprint branch. Demand for print paper continues just as brisk as it recently has been; in fact, with newspaper publishers receiving a greater amount of advertising business as the holiday shopping season approaches, consumption of newsprint is steadily mounting and demand as a result is being accelerated. Reports from authoritative sources say that very nearly all the tonnage of newsprint mills in the States are likely to produce during the remainder of this year has been contracted for; spot supplies therefore being of small volume and with publishers depending on purchases in the open market experiencing some difficulty in covering their requirements.

One of the most popular morning journals is printing an issue of 40 pages nearly every day and announces in practically every issue that it has omitted from two to ten columns of advertising, thus indicating that this publisher is limiting the size of his paper even though he is compelled to omit advertising. It is stated that the situation existing in this city in the newspaper publishing industry is duplicated in all parts of the country; that publishers in various large cities and towns as well as the small ones are printing larger issues than ever before. What else could explain better the strong market position of newsprint?

Book papers are increasing in demand and this kind of paper displays more firmness than in a long time. Prices are gradually strengthening and manufacturers are showing greater independence in regard to prices and deliveries than they have been able to in several years. The numerous trade periodicals and fiction magazines are getting back on their feet figuratively speaking, and are also increasing the size of their publications, thus leading to a larger consumption of book paper. Mills in the Middle West are reported insisting on at least 7 cents per pound f.o.b. New York for machine finished book paper, and only from mills situated near to New York where a low freight rate is involved can book paper of this grade be purchased at less than 7 cents. One of the nearby book paper mills is said to be delivering limited lots of machine finished book of not too fine a quality at 6.50 cents New York, but this is probably the exceptional prices applying to a certain grade of paper shipped from a point where only minor freight charges are involved. Super book is steady to firm at from 7 to 7.75 cents per pound f.o.b. New York, and coated book ranges in price from 8.50 cents upward, with only low qualities available at this bottom figure.

Fine papers are moving in consistently good amounts. Jobbers in New York report printers buying in better volume than for at least two years, and say that sales are showing a steady increase. It is quite evident that demand is principally for the medium and low qualities of bonds and ledgers, but the call for these is more than making up the relatively slower demand for high grades. The last production figures show that the output of fine paper in September was more than 31,000 tons, which is a third again as large as the September, 1921, production, and some 5,000 tons in excess of the average monthly output over the past five years. Fine paper prices are firm and are likely to continue so as long as sulphite and rag stock remain as high as they are today in price.

White tissue papers show an advancing trend and are in active demand, as they usually are just prior to the holiday season. No actual rise in quotations has been recorded this week, but local jobbers have been advised by manufacturers than an advance is pending. No. 1 white tissue is quoted at about 85 cents a ream in New York, with No. 2 white and No. 1 manila priced at approximately 10 cents a ream under the No. 1 white. Wrapping papers are in steady call and firmly quoted. Domestic No. 1 kraft is bringing 7 cents per pound ,and the No. 2 grade 6.25 to 6.50 cents.

The sharp decline in waste paper prices has not as yet affected quotations on box board; whether or not it will is a question. When it is considered that old paper costs were on a level far out of proportion to the prices prevailing on boards, it seems unlikely that board values will recede. In fact, even under current prices for paper stock, which are from $6 to $8 a ton below those of several weeks ago, board manufacturers are afforded a narrow margin for profit for the reason that coal and pulp continue on high cost levels and that labor also is abnormally high. Quotations on plain chip board are maintained at $60 a ton f.o.b. New York and on filled news board at $62.50 to $65.

GROUND WOOD. — Mechanial pulp is still about the strongest item of all the raw materials going into the manufacture of paper. Demand for this commodity is brisk, and proof is not wanting that some consumers who depend too much on open market buying to cover their requirements are not getting all the supply desired. Prices have climbed another notch this week. Domestic spruce ground wood has been reported sold at $38 a ton f.o.b. grinding plants, and imported ground wood has brought $39 ex dock New York. Importers say that they would have to secure $41 a ton on the dock here for any more ground wood brought over from Europe owing to the stiff prices demanded on the other side of the Atlantic. Sentiment in the trade regarding prices is very bullish and a majority of dealers and importers look for a further advence before the winter is far advanced.

CHEMICAL PULP — In some quarters of the trade it is said that demand for chemical pulp has simmered down a little, but this is viewed as strictly a temporary condition brought about by the acknowledged heavy importations from Europe during the past few weeks, which doubtless have caused paper manufacturers to hold back in buying for a time. Importers contend that the present large imports are nothing out of the ordinary and that they are quite seasonable, this being the time of the year when shipments from Sweden to the United States increase because of the rush to get pulp out before the Baltic freezes. Moreover, it is declared that Scandinavian producers continue to demand high prices and that therefore it is unprofitable to grant any price concessions on pulp making on this side for the reason it cannot be replaced any cheaper. Most members of the pulp trade expect prices to remain firm on about prevailing levels for at least the next several months, since, it is asserted, very nearly all the supply — domestic and foreign — that is likely to become available up until the end of the current year has been sold on contract thereby reducing spot pulp in the open market to a minimum.

RAGS. — Low grades of old cotton rags used in the manufacture of building papers continue in a very weak condition. Demand from consuming quarters has not improved this week, and, under pressure of dealers and packers to move stocks prices have declined further. No. 1 roofing rags are now available in New York at 1.10 cents per pound f.o.b. this city, and No. 2 packing at 95 cents a hundred pounds, with the probabilities favoring mills getting some supply at even under these figures. Other grades of old cottons are holding fairly steady in price though demand is not as active as it was. Whites are sought in spasmodic fashion, and blues are wanted only in certain quarters. New cuttings are firm, with no show of easiness. Prices quoted f.o.b. New York on new rags are about as follows: No. 1 white shirt cuttings, 11.50 cents; No. 2 white shirt cuttings, 6 cents; fancy shirt cuttings, 6 cents; unbleached muslins, 10.50 cents; No. 1 washables, 4.50 cents; blue overall cuttings, 6 cents; light silesias, 7.50 cents, and bleached shoe cuttings, 9 cents.

PAPER STOCK. — Additional weakness is apparent in old paper. Buying by consumers this week has been at best of small tonnage and prices have continued to

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decline. No. 1 mixed paper has gradually fallen in price until purchases at 90 cents a hundred pounds are easily executed at present, while folded newspapers are available at 1.10 cents a pound f.o.b. New York, overissue newspapers at 1.30 cents, and common mixed paper at 80 cents a hundred pounds. Old magazines also have eased off to about 2.40 cents New York for No. 1 heavy flat stock, and 2.10 cents for mixed books. Shavings are a little lower though dealers as a rule are holding these grades with relatively more firmness than others. No. 1 hard white shavings are available at 4.25 cents f.o.b. New York, and No. 1 soft white shavings at 3.65 cents a pound. Kraft paper is easy with offerings of No. 1 old kraft by dealers noted at 2.15 cents per pound New York.

OLD ROPE AND STRINGS. — After ruling firm for quite a spell, old rope has eased just a trifle in price, due, it is said, to fairly heavy imports of this commodity recently. Domestic manila rope of No. 1 quality is bringing no more than 5.75 cents a pound at dealers' shipping points in most cases though some paper mills are reported still paying up to 6 cents. Old bagging is quiet with roofing grades in a dormant position. No. 1 scrap bagging is quoted at around 1.15 cents a pound f.o.b. New York, No. 1 gunny at 1.10 to 1.20 cents, and roofing bagging at 80 cents a rundred pounds.

With The Woodsmen

FOREST FIRE INQUIRY

Several suggestions were made by Chief Provincial Forester E. J. Zavitz in his evidence this morning at the probe into the recent fire in Northern Ontario. These were:

A conference between Crown officers and municipal officers in regard of the method of controlling fire hazards round towns and settlements; additional legislation and administrative changes to require municipalities to control fire hazards in their territories; stronger penalties and the creation of much larger fire zones about towns.

He felt that the act should be amended making it obligatory for the person creating a hazard to clear hazard without notice, especially in cases of certain distances from railroads, etc.

"I feel quite certain that the act in regard to municipal initiative is very cumbersome and some improvement must be made in that act," said Mr. Zavitz

Mr. Zavitz took the ground that if the municipality of Haileybury knew that fires to the south, the west and the northwest of Haileybury had been approaching the town for some days, the municipality should have made a statement in accordance with Section 13 of the Forest Fire Prevention Act. His department then would have taken action, he said.

Fire Marshal E. Heaton is conducting the inquiry and R. S. Laidlaw is acting as Crown counsel.

"After the witnesses who have been subpoenaed by the Crown have been heard we shall be glad to hear any voluntary statements from any other witnesses, or refugees," said Mr. Heaton. He asked the press to make a special appeal to refugees who may be able to give important facts. "They will be provided for and welcomed."

Mr. Zavitz explained the fire patrol system used by the Department of Lands and Forests, as well as the lookout towers. "We are convinced it will be absolutely necessary to have aircraft detection," he said.

Many Parts Not Ranged

Continuing, Mr. Zavitz explained that portions of the area covered by the recent fire had not been ranged for a number of years. In this connection he mentioned an area south of Latchford and in the vicinity of New Liskeard and Haileybury. There had been considerable friction caused by allegations that rangers had interfered with legitimate settlers. Resolutions from a number of municipalities coupled with the low fire hazard had influenced the removal of some of the rangers.

The department required the rangers to be in sympathy with settlers clearing their land If not in sympathy, they would be dropped from the organization.

Mr. Heaton—"Has there been any improvement in the class of fire rangers in recent years?"

"We believe the quality has improved."

The impression that the fire ranging staff was composed of students was wrong.

The department had not withdrawn rangers from all the territory set out in the resolution, but from the most widely occupied area.

"If the condition existed that fires were burning on the south and west and northwest of Haileybury for some days and approaching to Haileybury to the knowledge of the municipality, was it the proper action of the municipality to have made a statement under Section 13 of the Forest Fires Provincial Act?"

"Yes."

"Had the statement been made to your department and organization would it have taken action?"

"I think they would. Yes, sir."

$15,000 TO STUDY PULPWOOD DECAY

Syracuse, N. Y., Nov. 9. — Advanced methods of forestry as applied commercially by big paper and pulp companies of New York was a feature of the joint meeting today of the New York Section of the Society of American Foresters with the Empire State Forest Products Association the state organization of lumber operators which also includes large manufacturers of pulp.

A. B. Recknagel, forester and secretary for the Empire State Association, showed working plans which he has prepared for the practical operation of big forest areas for the production of both hard and soft woods on a sustained yield basis, so that these forest areas may be continuous producers of timber crops for the lumber and pulp plants dependent upon them.

O. M. Porter, Secretary of the Woodlands Section, of the American Paper and Pulp Association, the foresters' organization of the paper industry, in this connection told of the recommendations for standard grades in the purchase of peeled spruce pulp wood, as the result of a conference of pulp wood producers and purchasers at which three grades of wood were decided upon, particularly specifying the percentage of Balsam and degree of rotten wood permissible in the different grades. He also announced that the Woodlands Section at a recent convention at Chicago had authorized the expenditure of $15,000 in cooperation with the United States Forest Products Laboratory at Madison, Wis., for a study of decay in pulp wood, as affecting paper and pulp products.

PULP RESEARCH AT McGILL

The deterioration of pulp is absorbing the attention of Miss Jane Spier and Miss Kathleen Godwin. Pulps under storage show signs of discoloration which results in a serious loss in value, the loss in the United States from this cause during the war amounting to more than five million dollars annually. The cause of the deterioration appears to be bacterial moulds or other forms of fungi. Miss Spier and Miss Godwin have already isolated a large number of species belonging to the different groups of fungi and are inoculating sterilized pulps with organisms from pure cultures to ascertain whether there is a casual connection between the fungus and the deterioration in each case. They also hope through experiments upon conditions under which the fungi flourish or die, to ascertain methods of storage which would prevent deterioration. To this end they are anxious to get specimens of deterioration pulp from as many sources as possible. Already they have obtained many, and they will be glad to receive more for investigation from merchants if sent in sealed packets to avoid infection.

The loss from deterioration in Canadian mills is not great since the war, there being no occasion to store large quantities, merchants say.

Miss Spier is working on chemical pulp and Miss Godwin on ground wood pulp. They have already presented a preliminary study in partial fulfilment of the requirements for their M.Sc degree which they took last year. Both hold bursaries from the Advisory Council for scientific and industrial research.

AUTOMATIC LOAD REGULATOR FOR MOTOR-DRIVEN PULP GRINDERS

An automatic load regulator designed to errect the fluctuating load conditions of motor-driven pulp grinders is described in a publication, known as Leaflet No. 1934, which has recently been issued by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

With the best of care and the greatest degree of supervision in the operation of grinders and the filling of pockets, it is impossible to maintain a uniform load on the grinders. With the class of labor usually employed, the load fluctuations generally vary from 25 to 50 per cent. above and below the average load, and it is not uncommon to find that 25 to 40 per cent. more power is being paid for than is actually being used; i.e., power is being paid for on the basis of a peak perhaps 25 to 40 per cent. higher than a curve representing the average load.

By the use of the regulator described in this publication however, all peaks of any size can be prevented, and, if ordinary care is used, a practically uniform straight load can be secured, assuring maximum production and the most efficient and economical use of power.

BARNJUM TOWN FOREST PRIZE AWARDED

The Barnjum prize of $250.00, in cash, for the best municipal forest plantation in the Province of Quebec, has been awarded and paid to the Town of St. Jerome, Lake St. John.

It is to be hoped that this may be the inauguration of a general tree planting campaign by all the municipalities throughout the whole Dominion of Canada.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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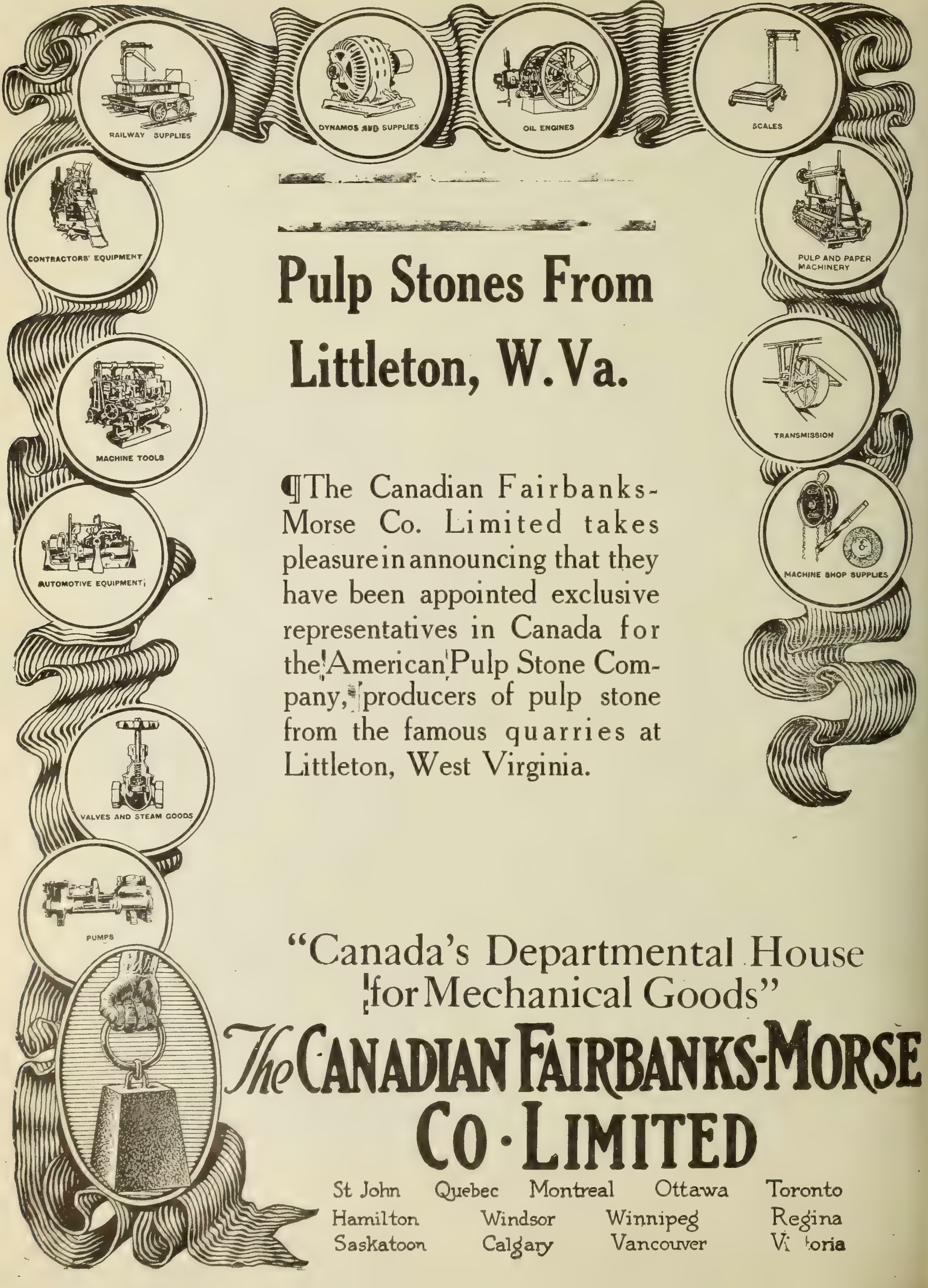

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-:- EDITORIAL -:-

WHERE PROFIT BEGINS

Consider the balance sheet. There you find two exceedingly significant words, Profit and Loss, one on either side of the heavy line down the center. What does the balance sheet tell? Ordinarily we think of it as telling whether we are better off at the end of the period considered than at the beginning. For most people, this information is quickly got by looking at the family check book, or perhaps in the purse behind the clock in the kitchen, together with a glance at the bills on the back of the cupboard door. For others it means considering the instalments paid on home or furniture, or, perhaps, amounts borrowed on insurance policies to pay income tax. For business organizations the balance sheet is often complex, but the last line is always simple and easily understood. If it is in black ink, well and good; if in red ink, call the doctor—or the undertaker. Red is the universal danger signal, whether it be a red nose or a red flag—or, red ink.

In the case of the balance sheet, red ink means "a loss." Now a loss is a double calamity. It means that over the next period it will be necessary to make up some ground before progress begins, and that further ground must be covered in order to get to the place that should have been the new starting point. "Holding your own" may be a good motto for a bull dog, but it is a poor excuse for men in business. Variety may be the spice of life, but progress is the life of business. Progress means employing more men, giving them better wages and better living conditions, producing more goods and better goods, and rendering greater "service". Profit makes this possible, and the serving makes life happy and worthwhile.

A glance at the balance sheet shows that losses must be overcome before there is any profit. Sometimes a balance sheet shows a profit that is not there, not because the profit side is padded, but because the loss side is not complete. The items of loss have two principal elements, quantity units and unit cost. The quantity units apply to material, power and time (labor). Unit costs apply to each, which may yet be divided and subdivided until a point is reached where the possible loss in cost of material or operating time would be less than the cost of keeping the record. But even if complete account is not kept of each item of possible loss, it is necessary to know the danger is there. Locating and stopping losses can only be complete, or even approximately so, when every man in the mill is aware that he has a personal interest in the matter.

The Technical men have been giving a lot of attention to matter of material losses, but we feel that the man on the job doesn't realize what a leak in a steam pipe, or the use of too much alum, or a thousand less obvious things mean, until he sees it in dollars and cents, and realizes that his own employment is insecure if the losses exceed the profits, because he and his fellows have not stopped every possible leak. He must realize also, that all on the profit side is not "velvet." There are bound to be lean years when there is little or no profit, yet he is kept on the pay roll and given something to do. Experience shows that most men will not make provision for idle time, and if such provisionn is to be made, every man must help make it possible for the management to build up a reserve that can be drawn on in times of adversity to hold things together.

The thing a man fears most is loss of his job. Except for accidents due to personal carelessness, or because of personal inefficiency or insubordination, men are usually out of work because losses have exceeded profits till the firm is "busted." The plant is shut down.

It may take some time for the crisis to develop, but we feel it can safely be said that the trouble usually originates in an inadequate conception and knowledge of costs, and particularly of the costs of losses.

There are some kinds of loss common to all industries, such as heat, power, materials and labor. These are lost in various ways, and each industry has its own peculiar ways of throwing money away. It may be heat units in flue gas or escaping steam, lack of proper lubrication on a bearing, using a wheelbarrow instead of a gravity conveyor, sending wool grease down the sewer, or letting fungus destroy a pile of pulpwood. In most cases it is lack of education of the individual workman in the value of losses and an inspiration of his desire to put every available cents worth of time and material into his firm's product. Many a man will smile at a ton of pulp going down the river who would protest vigourously if he found a potato in thegarbage can. Every man can save something, somewhere. Show him how and why.

In the paper industry the Cost Association is on the trail of the cost of the loss. The pulp industry needs a similar organization. The need is partly filled by the cost work of the News Print Service Bureau.

We are entering a period of prosperity. It is now possible to lay aside a reserve for idle time; it is absolutely necessary to do so. This provision cannot be made fairly nor correctly unless done scientifically. A cost system need not be elaborate, but it must be adequate to the business and must have the support, so far as is needed, of every employee in the works. Why not get busy now and prepare for a possible period of part time operation? Get a reserve to take care of the overhead on the idle machinery and men. Base prices on costs of actual productive operations and proportionate overhead. With costs properly ascertained, there will be less throat cutting, closed factories and idle men where the next pinch comes.

THE PUBLISHER AND HIS PAPER MAKER

Why do some publishers get their paper year after year from the same mill? First, because they get the paper they want and, second, because they know they will get it when they want it. Now getting paper may be an entirely different proposition than merely ordering and paying for it.

In some few cases, where connections are direct and the haul short, it is a simple matter to get shipments through promptly. But most cities are much further from their paper supply than from their milk supply and shipments of one must come almost as regularly as of the other. In these days of expensive warehouse space, high price of goods and high cost of local transportation, large stocks are not carried by either publishers or paper mills. It falls on the transportation departments of the mills to keep the stream flowing and we wonder just a bit whether their efforts are properly appreciated.

Under the best of conditions, it is no easy task to route shipments properly, but even this is often complicated by export and import regulations, chartering space in steamers, transferring the paper, etc. The situation is much more difficult when strikes and embargoes impose further burdens and worries on the traffic man. We venture to state that few people realize the amount of detail that must be attended to "*properly*" from the time the mill gets someone's telegraph order till the paper is at the consumer's door. The paper may be in stock or a special machine order may be required. The rolls must be stencilled, numbered, weighed and loaded; a special department has secured a car, inspected and prepared it. The proper bills, manifests, etc., are made out and the car starts. The train is followed from station to station; agents at critical points see that the car is not side-tracked, that it passes customs and other hazards till, at last, it arrives at its destination and is in the hands of the purchasor.

This looks simple enough, to read it in a single sentence, but spread it over several days or a week of work and worry and one realizes the service rendered by the traffic departments of the paper mills. It is this type of service that assures Canadian mills the enviable place and reputation they rightfully enjoy.

A RECORD ORDER

The Pulp and Paper Magazine, which is the distributors, outside of the United States, for the textbooks on Pulp and Paper Manufacture, has just sent to the publishers an order for 169 volumes of the books. A number of these are to be furnished in pamphlet form for students in the Pulp and Paper Department of the Institute of Industrial and Domestic Arts. The other volumes ordered are for delivery as widely as British Columbia, Nova Scotia, France and Italy. This indicates the excellent progress that is being made in the educational work organized by the Pulp and Paper Industry, and also is a testimonial of appreciation of the excellence of the textbooks that the Industry has put out.

The record for enrollment of students as to numbers is held at present by the Belgo Paper Company at Shawinigan Falls, but the record for percentage of employees enrolled in correspondence courses goes to the Lincoln Mills, Limited at Merritton, Ontario. The management of the paper mills where the representatives have introduced these courses have been cordial and helpful in giving full cooperation. The Canadian industry is fully appreciative of the value of the educational work based on the textbooks to which they have so generously contributed, and the men in the mills understand the value of education and are eagerly availing themselves of this opportunity to further improve their qualifications along this line.

COBWEBS

The American Paper and Pulp Association has had such a demand for copies of the statement on the business conditions in this industry, issued at the Fall meeting last month, that it has been reprinted for wider distribution. The title of this circular is "The Paper Industry Returns to Normal." Copies may be had on application to Secretary Baker, 18 East 41st St. New York.

The Institute of Industrial and Domestic Arts wishes to thank journalistic friends in the U. S. A. for kindly references to the correspondence courses in Pulp and Paper Making.

Our sympathy is extended to Levi Bros., Toronto, in the loss of their warehouse containing a stock of waste paper.

NOW, spelled backwards, reads Won. What is it worth to you to win? What is it worth to you to say, "I HAVE WON"?

Use of Aircraft in Forest Operations

By H. S. QUIGLEY

Chief Pilot, Price Brothers & Co.

During the past three years there has been an extensive development in the use of the aeroplane and seaplane in connection with forest work in Canada. The flying machine has been adopted not only by several Governments, Dominion and Provincial, but is being utilized by a number of the large pulp and paper corporations throughout the country. Naturally at first it was accepted more or less as an experiment, but a greater familiarity with it, through the achievement of practical results has made its usefulness recognized. A few sceptics remain, but these will gradually become convinced and so disappear.

The use of aircraft in connection with forestry operations may be divided into three main classes; 1st, fire patrol, 2nd transportation, and 3rd, surveying, the last including photography, sketching, and mapping.

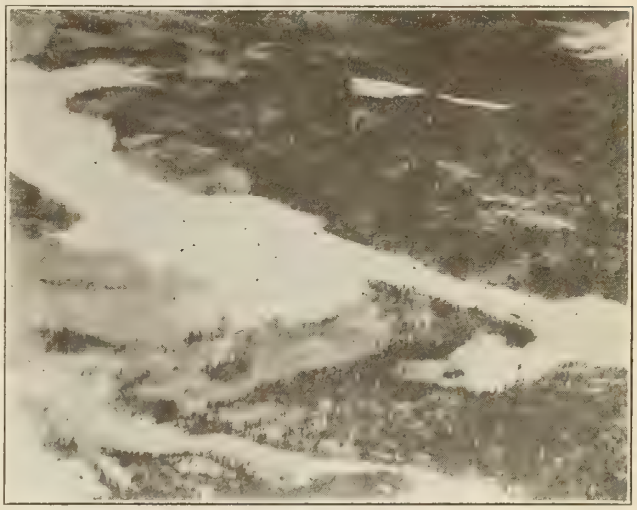
Fire patrol has received widespread appreciation from limit holders and Government departments and naturally at the present time may be considered the most important work. The term itself is more or less a general one, which embraces all flights in connection with the detection or reconnaissance of forest fires, and includes the sketching of recently burned areas after the fire has been put out.

The detection of the fire is not a difficult matter, but an aerial "observer" must also ascertain the exact location of the fire, its extent, and whether it is in a dangerous location or not. If it be a settler's fire he must find out whether it is under control and whether it is dangerously close to the edge of a forest.

In a fire patrol work the camera has been of great assistance in confirming observers' reports, and indicating old roads or uncharted streams by which the ground crews may easily approach a fire. For such work the oblique, hand-held camera which was developed in the Air Force during the War, is generally used.

As an effective aid to an organization employed in fire, protection air craft has proved almost invaluable. Many times a fire has been reported from a man on the ground as being close to a certain river, but by the time the ground crews arrived it would be well beyond control from that position. On the other hand from the vantage point in the air one might see small lakes, streams, (often uncharted) or muskegs which would give an excellent line of defence from which the fire might be attacked with a reasonable chance of success. All this is reported to the ground crews without delay. In the case of uncharted lakes the observer may quickly sketch them on a map or photograph them for the guidance of the ground crews. If the air is rery smoky from the fire he must rely wholly on his sketch, but, if he gets to windward of the fire, he secures good photographs as well.

Foreground old burnt area reproducing in hardwood with a few of the old spruce patches still evident



Winter photograph. On left, burned over. On right, solid coniferous area

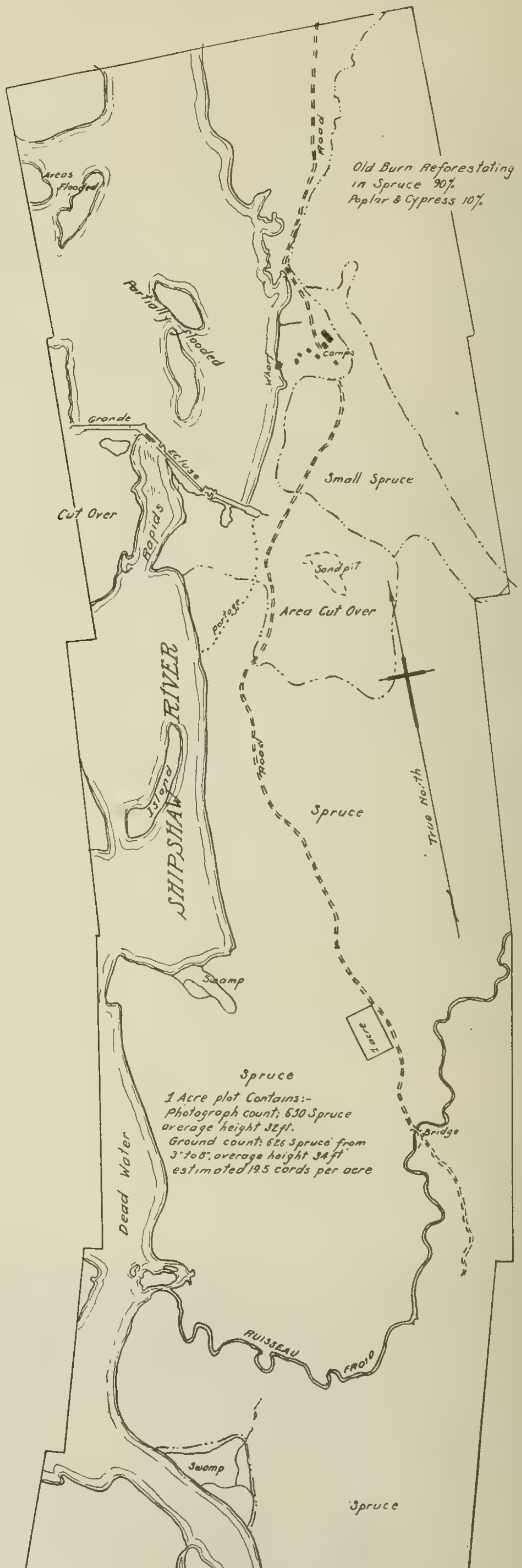
Another case where aircraft is useful is after a rain where the fire is thought to have been extinguished, but when it has been burning over a large area and patches are still on fire. These small fires often start several miles from the ground workers and might easily continue for several days without detection by them. On many occasions we have observed from the air and conveyed to the ground crews the exact location of such fires which they tackled and put out before they became dangerous.

Fires can ordinarily be sighted at distances of five to ten miles and instances are not uncommon where they have been sighted forty miles away.

For the work of fire patrol alone many machines have justified the expenditure of capital and operation expenses. A machine, however, is capable of performing other kinds of work than this and it is usually found advisable to extend its operations and thus work out a reduction in overhead expenses. Such activities may be found in the line of transportation, but more particularly in surveying of limits.

One need hardly refer to the advantages from a transportation standpoint of aircraft, as this is more or less obvious. One of the most valuable types of work is of course, the transportation of men to fight fires. If the machines is a seaplane of the proper type the men can be landed on a lake close to a fire and put ashore with their equipment. On many occasions, moreover, forest engineers, woods managers and others who have had occasion to cover long distances in a very short time have found the aircraft a very speedy and flexible means of transportation.

Aerial Survey of Part of Shipshaw River
Scale 1016′ = 1″. (Photo by Price Bros. & Co. Aviation Dept. June 30, 1922)



1 Acre plot Contains:-
Photograph count; 630 Spruce average height 32ft.
Ground count: 626 Spruce from 3" to 8", average height 34 ft
estimated 19.5 cords per acre

Total area contains	409.6	Acres
Consisting of -		
Small spruce 3" to 4"	20.8	"
Over 90% Spruce 3" to 8"	254.4	"
Cut over	30.4	"
Water	137.6	"
Swamp	3 2	"
Flooded land	6.4	"

In connection with survey work the usefulness of the aircraft is being recognized to an extent that surprised even those in the air service, particularly for preliminary or exploration work. For it combines in an unusual degree, not only speed but accuracy.

A very practical method for this survey work is to photograph an area along a known river as a base line and from this other photographic strips may be run in different directions and further "tied in" by other lines parallel to the river. As a rule one does not photograph the whole area in between, but from observations one is able to sketch this in on a man leaving the photographic sections as base lines. The photo strips usually cover a distance of half a mile wide. (The camera used for this work is an automatic one which can be set to take photos at different intervals according to the speed of the machine and its height from the ground.)

When the sketches are made the first object is to get the burnt areas, the waste lands and the waterways. There are left then only the timber areas. The observer then determines in the timbered areas the old forest from the younger growth. Dealing with the old forest this must be classified according to type such as hardwood coniferous, these usually in a pulp wood forest falling into the following divisions, 1st, all hardwood; 2nd, all coniferous; 3rd, mixed timber where hardwood predominates; and 4th, mixed timber where coniferous predominates.

Many observers have been able to define very closely the percentages of one type where it is interspersed with another, and to give a close estimate of the stand, but this naturally depends on the ability of the observer and on his practical experience as a forester. Some expect too much in this direction from a young aerial observer whose ability to estimate should hardly be compared with a forester of twenty years or more experience in this line of work.

In making estimates in detail on various areas the photographs are usually enlarged and are then examined through a glass or by the naked eye and individual trees are counted. It is possible, as has been said, to determine also the size of the trees by measuring the shadows, taking in the angle of the sun and the time of day. A more practical method is to erect a vertical stick somewhere on the premises and have the length of the shadow measured at set times during flights.

(3) This photo taken altitude of 6000 feet, shows in foreground area already burned over. To give an idea of the extent; from lake to river is nearly three miles

Perhaps I may impress the latter point upon readers by an illustration marked on a map which I have before me. A photograph was taken of a certain area from the air and then a section of it enlarged and a one-acre plot marked out. By photographic count this area contained 650 spruce trees. By figuring on the length of the shadows as seen from the air we estimated the average height of the spruce in this plot to be thirty-two feet. By actual tests on a ground count the area contained 626 spruce trees, with an average height of thirty-four feet. This is a very close estimate in itself, but those who are familiar with the methods even in ground counts, where pacing frequently is done in estimating distances, one may be pardoned from holding the view that the air count was the more accurate of the two.

A LITTLE TALK ON THRIFT

By S. W. STRAUS,
President American Society for Thrift

One of the values of thrift lies in the fact that, under prudent care, your dollars, as you add to them one by one, become your constant co-workers. And no matter what else may happen, they will keep on working for you day and night as long as you allow them to do so.

Co-operate with your dollars.

A squandered dollar is lost and gone forever. Whatever value it may have possessed for its owner has ceased for all time. When it passed from his hand there went with it endless opportunities for development and happiness.

Saving a dollar constitutes merely the beginning of a helpful process. An enthusiasm for thrift is aroused which makes it doubly easy to save the second, and so the good work continues until in less time often than had been considered possible, a substantial sum has been accumulated.

If you are among those who unfortunately have never become savers of money, do not feel that the start is not worth while because the amount of your first savings must be limited. A mistake is made by many who insist on waiting until such a time as they think they can put away a comfortable amount of money. In most cases of this kind such a day never dawns. The way to make the start in thrift is to begin saving at once, regardless of how small the amount must be. Once you have started you will find the pathway of thrift is by no means a difficult one to travel. No matter how slow your progress may seem at first and how many of the so-called pleasure of the world you appear to be giving up through self-denial, you will find that, in the end, the path of thrift leads to success.

Save that first dollar. Put it to work for you. Not next week or next year, but now.

SALUTE TO THE TREES

Many a tree is found in the wood
And every tree for its use is good;
Some for the strength of the gnarled root,
Some for the sweetness of flower or fruit;
Some for shelter against the storm,
And some to keep the hearthstone warm;
Some for the roof and some for the beam,
And some for a boat to breast the stream.
In the wealth of the wood since the world began
The trees have offered their gifts to man.

Henry Van Dyke

Developing Overseas Markets

Extracted from "Agricultural and Industrial Progress in Canada published by the Department of Colonization and Development of the C. P. R.

The effect of the Fordney Tariff, which was awaited by Canada with a certain amount of dread and apprehension, has been in certain directions that of a blessing in disguise. In throwing Canada back upon her own feet for support it has developed greater independence in the Dominion and spurred it on greater efforts to hold within the country the manufacture of certain products which previously went abroad. The other effect has been to divert the tide of products effected by the tariff into other channels, and Canada has sought again the overseas markets neglected for so long. It is inevitable but that produce other than the agricultural should to some extent be affected by the change.

The necessity and inclination to seek new markets, and above all to develop the British market, came at a time most opportune and auspicious. The manufacturer in the United Kingdom, after the disturbances and disorganization of the war years and their aftermath, found himself gradually getting back to more normal conditions and to a state where he could satisfy the demands which might be made upon him for products of all kinds. He was paying the way for a vigorous trade aggression in which the British Dominions were not to be neglected. He came to meet Canada halfway and sent delegations and representatives to study the markets and report on conditions and methods. This was doubly gratifying in view of Canada's desire to develop overseas markets and of the depreciated conditions of sterling which had been the depressing feature of Canadian finance for so long.

Penetrating the European Market

Canada has likewise, on her part, vigorously entered into the development of the British market, but is not confining her efforts to this, but going extensively afield. She is penetrating the European markets in a manner which suggests a development of permanent profitable trade. She has realized the wisdom of having several smaller markets, rather than depending to a large extent upon one large one, which by a sudden change of policy may seriously disrupt her business. Canada's trade with the various countries of Europe has long been a substantial and valuable one, but greater opportunities have continually been pointed out by visitors abroad, and the Dominion is now going systematically about investigating these and exploiting them.

The director of the Commercial Intelligence Service at Ottawa and the Canadian Government Trade of Commissioner in Great Britain have left on a tour of Europe to investigate conditions in various countries and to stimulate their trade with Canada. Their endeavors are not to end here. It is expected that out of their investigations and decisions will result a new Canadian consular service abroad with the amalgamation of the duties of Trade Commissioner and Immigration Agent in districts or countries where the field is not large enough for either official alone. The establishment of Canadian visé centres in Europe will probably give additional facilities for the Department of Trade and Commerce and be included in the duties of the new officials.

In the month of July Canada resumed trade relations with Russia, and there is under consideration the sending of a Canadian Trade Commissioner and other representatives to Russia, and it is anticipated that the Soviet government will send a representative to Canada. This is a step towards greater trade with Europe which is expected to develop to some proportions.

Growth of Trade with Britain

In this connection it is interesting to note the growth of trade between Canada and the United Kingdom. In 1868 Canada exported goods to the value of $17,905,808 to the United Kingdom. Ten years later this had doubled, amounting to $35,208,031. By 1900 exports amounted to $96,562,875, and ten years later $139,482,945. In 1920 goods to the value of $489,152,637 were taken by the British Isles, but by 1922, owing to a decrease in prices but also to a falling-off of trade which was purely a development of the war years, they amounted to only $299,361,675.

Canada's imports from the United Kingdom in 1868 amounted to $37,617,325. By 1880 these were only $33,764,439, and by 1890 had come back to $43,277,009. Between 1900 and 1910 they jumped from $44,279,983 to $95,336,427. The year 1920, due to a continuance of war-time purchasing and inflated values, showed the tremendous increase to $213,944,814. The year 1922 exhibited a decline to $126,362,631.

The total trade of Canada in the last fiscal year amounted to $1,488,045,012, the sum of 747,804,332 being accounted for by imports and $740,240,680 by exports. Imports from the United Kingdom were $117,134,576 and from the United States $516,105,107. Exports to the United Kingdom were $299,361,675 and to the United States $293,906,643. Imports from the United Kingdom fell away by $96,838,986 and from the United States by $340,071,713. Exports to the United Kingdom declined by a value of $13,483,196 and to the United States by $248,416,324.

THE CARE OF FELTS IN SUMMER

Felt stocks must be watched with especial care in summer. The store-room should be cool and absolutely dry, as moisture causes mildew and destruction to wool fibres. Felts and jackets should be kept in their original papers, tied tightly, and before storing, each package should be inspected to make sure there are no holes in the wrappers where dirt or moths may enter. Moth preventives should be freely and frequently used, and the storage shelves covered with strong tar paper. Flake naphthalene is the best preventive, but it evaporates and must be renewed every few weeks. Felts should never be laid against brick or stone walls, because the contact brings about a chemical reaction that rots the fibre. The stocks should be examined at least once a month or perhaps oftener in summer for traces of moths or other injury. The entire felt room should be kept clean and in good order, for dirt injures felts and attracts moths. —Alfelco Facts.

England owes much of her energy and character to the religious keeping of the Sunday. Why cannot France follow her, as the Sabbath was made for all men, and we need its blessing.—*La Presse, Paris.*

The Convention of the Cost Association

The Convention held by the Cost Association of the Paper Industry at the Nonotuck Hotel, Holyoke, Mass., on Thursday, Friday and Saturday, November 9th, 10th and 11th was a decided success.

The proceedings were opened by a report from the Secretary-Treasurer, Thos. J. Burke, in which he stated that Holyoke might be considered the birthplace of the Association, inasmuch as the prime movers in its organization were connected with mills in the Connecticut Valley. He stated that the work of the Association might be considered under three headings: (1) Benefits to the industry; (2) Benefits to the different groups in the industry and (3) Benefits to the cost men of the industry, and dealt with these in detail.

He referred to the fact that the Association had decided to begin the collection of statistics relating to conversion costs for the purpose of permitting manufacturers to compare their efficiency with other manufacturers making the same grades of products. He stated that he hoped all cost men in the various groups would be prepared to cooperate closely in the work of the different committees who were drawing up a standard cost estimate form to be used in compiling these statistics.

He referred to a statement issued recently by the Fabricated Production Department of the U. S. Chamber of Commerce and agreed with statements made therein that cost accounting should not be considered an incidental and temporary service to pulp and paper manufacturers but must be organized on a permanent and continuous basis, since immmediate results must not be expected from a campaign for uniform cost methods.

Election of officers for the forthcoming year then took place and the following were elected:

President, C. A. Jasperson, Secretary, Nekoosa-Edwards Paper Co., Port Edwards, Wis.

1st Vice-President, Dr. R. N. Rindfunz, Secretary, American Writting Paper Co., Holyoke, Mass.

2nd Vice-President, John C. Schmidt, President, Schmidt & Ault Paper Co., York, Pa.

3rd Vice-President, W. W. Sunderland, President and Treasurer, Miami Paper Co., West Carrollton, Ohio.

4th Vice-President, E. J. Fitzgerald, Office Manager, Scott Paper Co., and Chester Paper Co., Chester, Pa.

Executive Committee

C. A. Jasperson, President.

Dr. R. E. Rindfunz, 1st Vice-President.

Col. B. A. Franklin, Strathmore Paper Co., Mittineague, Mass.

S. L. Bush, Manager of Research, Crocker-McElwain Co. and Chemical Paper Mfg. Co., Holyoke, Mass.

J. E. Hyde, S. D. Warren Co., Cumberland Mills, Me.

Dr. Hugh P. Baker, Executive Secretary, American Paper and Pulp Association (ex-officio.)

Thos. J. Burke, Secretary-Treasurer, Cost Association of the Paper Industry (ex-officio.)

After the election of officers, ex-president Bush made a splendid address on "The Cost Accountant—His Past, Present and Future Place in the Pulp and Paper Industry." Mr. Bush, who is Manager of Research of the Crocker-McElwain Co., and Chemical Paper Mfg. Co., has filled the presidency of the Cost Association for the past two years and during this period has given unstintedly of his time in assisting the Association's work. He was mainly responsible for the drawing up of the publication "A Budget Cost System for Paper Mills" which was published last year by the Association, several hundred copies of which have been sold to cost men in the industry in addition to being distributed to the members of the Association. Mr. Bush in his address traced the great progress made by the cost accountant in the industry in the past few years and stated that in his opinion, as in other industries, executives would as time went on recognize more clearly the value of his work and the necessity for a properly constituted cost department.

Reports were also made by the Chairman of the Cost Committees appointed to represent the different groups in the industry.

The afternoon session on Thursday was taken up by the address by Mr. J. A. Reilly, Manager Cost and Inventory Department, American Writing Paper Co., on the subject of "A Standard Basis for Comparative Cost Estimates." Mr. Reilly submitted photostat copies of a standard cost estimate and a chart showing distribution of all expense items and determination of departmental rates. He went carefully through the standard cost estimate, item by item, explaining the different items and how they should be compiled. The whole session was taken up with his address and the discussion which followed it and it was decided to make several adjustments in the estimate.

A very successful Banquet and Dance was held in the evening when the following films were shown:

"Thirsty Fibre" — Scott Paper Co.

"Safety Picnic" — Nekoosa-Edwards Paper Co.

"Making Paper" — Writing Paper M'f'rs. Ass'n.

Addresses were also made by Col. B. A. Franklin, vice-president of the Strathmore Paper Co. and E. H. Naylor, Secretary-Treasurer, Writing, Cover, Book and Tissue Paper M'f'rs. Associations. The former spoke on the subject "Men Make Systems — Systems Cannot Make Men", and the latter on "The Executive and the Cost Accountant." Both speakers stressed the necessity for hard work on the part of the cost accountant, the former referred to the struggles he had had in his early days to draw up a cost system without the necessary cooperation when he had had to guess at his figures because there was no other way to get them. Amongst other things he stated that "Unquestionably a constant study of cost work is at the basis of proper progress of cost system work if we are going to make the progress that we want to." Mr. Naylor stated that he would prefer not to hear the term "cost clerk", preferring that of "cost executive" which he claimed every cost man should be if he were properly carrying out his duties. Mr. Naylor stressed the fact that cost men should mix a little salesmanship in their work in order that they might sell themselves properly to their executives as well as to the other departmental heads.

Friday morning very interesting addresses were given by Harold Dudley Greeley, C. P. A., Treasurer, National Association of Cost Accountants, who spoke on "The Use of Ratio Charts in Business," and G. A. Ware, A. C. A., Assistant Secretary, News Print Service Bureau, whose subject was "The Value of Comparative Costs." The principle feature of Mr. Greeley's address was the advocation of logarithmic charts instead of linear charts in the presentation of figures, in order to show their proper relation to each other. Logarithmic charts are so ruled that the distances between the lines instead of representing actual differences represent proportionate differences. For instance, on a linear chart, the space between lines drawn to represent the dollar level and the ten thousand dollar level would be the same as the difference between lines representing the ten thousand dollar and the twenty thousand dollar level, whereas on a logarithmic chart the space between lines representing the thousand dollar and ten thousand dollar levels would be the same as the difference between lines representing the ten thousand and hundred thousand dollar levels, since one thousand bears the same proportion or ratio to ten thousand that ten thousand bears to a hundred thousand. Mr. Greeley presented a number of interesting charts showing very clearly that by using legarithmic, or as he called them "ratio charts" facts and figures were presented in a manner to show their direct relation to each other. The Cost Association expects to publish his address in the near future as soon as photostat copies have been prepared of some of Mr. Greeley's charts.

Mr. Ware in his address illustrated very clearly the fact that comparative costs have been of great assistance to the newsprint manufacturers in assisting them to improve their manufacturing efficiency. He pointed out that owing to the peculiar nature of the manufacturing processes involved in paper making there is a great deal of room for such improvement and that the comparison of conversion costs was undoubtedly the best method of assisting manufacturers to do this.

The afternoon of Friday was given up to "Round Table Group Conferences." In the Writing and Cover, Tissue, and Wrapping groups standard cost estimate forms were decided on and will be issued shortly to those mills which have agreed to send in their costs to the Association. The Chairmen of these different group committees explained carefully that these comparative conversion costs will be compiled on a standard basis along the lines suggested by Mr. Reilly, i.e., by using the specifications as stated in the proposal forms used by the Joint Committee on Printing appointed by the United States Government. The various trade association secretaries will be requested to decide which specifications shall be selected so that when compiled the statistics may prove of the greatest usefulness to the greatest number. In this connection it should be clearly understood the chief object of compiling these figures is to compare the costs for the purpose of assisting the mills to improve their manufacturing methods by showing them where their costs are high as compared with other mills making the same product or with other mills who are in a position to make the same product. The whole afternoon was devoted to those group meetings and in each case it was decided to go ahead immediately after the forms are ready and collect figures relating to conversion costs.

The new president of the Cost Association, Mr. C. A. Jasperson, is the first president from the West. He is very well known to the members of the Cost Association, since he has been a regular attendant at their meetings and has on several occasions made addresses on different subjects. He is also president of the Wisconsin Local Division of the Association which has been active ever since it was established some years ago and has been extremely useful in spreading the gospel of cost accounting amongst the mills in that state. Mr. Jasperson is extremely enthusiastic about the work of the Cost Association and anxious that it shall grow in membership during his term as president and requests that all mills interested in proper cost keeping should immediately consider the advisability of joining the Association, thereby doing their share toward placing the industry on a sound economic basis.

Saturday morning was given up to visiting the Chemical Paper Company and the American Writing Paper mills in Holyoke after which those attending returned to their respective mills feeling that this convention was one of the best yet held by the Cost Association.

SYSTEM FOR GRADING PULPWOOD

As the result of a series of conferences between pulp wood producers and purchasers the Woodlands Section of the American Paper and Pulp Association has recommended the adoption of the following grades of spruce pulp wood for contract specifications for New York mills:

Grade No. 1 — (a) Species. Spruce — not less than 80 per cent; balance Balsam.

(b) Sizes — 4′ lengths, with minimum top diameter of 5″.

(c) Trimming and Piling — Sticks must be square-ended, with knots trimmed even with the body of the stick. They shall be piled close and straight, in accord with usual scaling practice. Knots over 2″ in diameter will not be accepted.

(d) Rot — No rot accepted.

Grade No. 2 — (a) Species. Spruce — not less than 60 per cent. Balance, Balsam.

(b) Sizes — 4′ lengths, with minimum top diameter of 4″.

(c) Trimming and Piling — As in Grade 1. Knots over 3″ in diameter will not be accepted.

(d) Rot. — Rot shall not exceed 5 per cent. of the quantity of wood involved. No single stick will be accepted if containing more than 25 per cent rot.

Grade No. 3 — (a) Species. Spruce — not less than 40 per cent. Balance, Balsam.

(b) Sizes. 4′ lengths, with minimum top diameter of 3″.

(c) Trimming and Piling as in Grade 1. Knots over 4″ in diameter will not be accepted.

(d) Rot — Rot shall not exceed 10 per cent. of the quantity of wood involved. No single stick will be accepted if containing more than 25 per cent. rot.

These grades were prepared by the New York Division of the Woodlands Section's Trade Customs Committee. W. S. Smith, of the Sherman Paper Company is Chairman of this New York Committee, which discussed these proposed grades very carefully with both producers and buyers for New York mills. Specifications are being similarly worked out for the other pulp wood regions of the United States.

The time has come when it is going to pay in dollars and cents to grow trees. When foresters can demonstrate to the paper manufacturer that he can afford to grow pulpwood, we are going to see the same sensible turning to forestry that we have seen in the turn to better banking methods and better methods of manufacture.

A Careless Workman is a Cracked Wheel on the Machinery of Time.

Press Room Requirements*

Whatever may have been the business antagonisms of the past, common interest and commonsense call for a cordiale entente between press room and paper mill. They are interdependent, not independent. The supreme test of very mill superintendent's product is in the press room. Likewise the record of a press room superintendent is affected to a very considerable degree by the paper sent him from the mill. I look forward to the day when we may have joint meetings of the practical makers and the practical users of newsprint to discuss their respective needs and troubles. When men once arrive at mutual understanding of each other's problems the road to progress is smoothed.

The price per pound that a publisher pays for paper too often does not represent the real cost. His paper expenses not f.o.b. shipping point, but are based on the number of printed copies that come from the press. Between the finishing room of the mill and the circulation department of the newspaper there are many slips that mean profit or loss to both manufacturer and publisher.

It is human nature to shift the blame on the other fellow, passing the buck is the popular phrase. Pressmen charge most of their breaks and delays to bad paper. Mill men retaliate with criticisms of press room methods. Usually details and specifications are lacking. Long range firing like this is apt to be aimless and ineffective. My observations, with the advantage of being able to check up in both mills and press room of the New York World, lead to the conclusion that there are rights and wrongs in both camps, with a very wide no man's land, namely, transportation, lying between them.

I have very little fault to find with newsprint produced by leading domestic mills so far as quality of the paper itself is concerned. In formation of the sheet, in finish and in tensile strength, high standards are well maintained, and I am leaving that responsibility entirely in your hands. The principal flaws revealed in press rooms are not intrinsic but contributory, usually caused by carelessness and lack of proper attention to details after the sheet has passed through the machine. Up to this point science, skill and machinery have played the principal parts in making paper, but once past the calender stack it falls into the hands of that most uncertain factor of all operations — the human equation — and troubles begin.

The finest roll of paper that a foreordained, born-to-order superintendent can produce must run a gauntlet of more or less careless, indifferent bunglers lined up to slam bang the paper all the way from machine room to press room, pounds of waste to every bump, piling up costs on the publisher and criticism on the maker. Everybody passes the buck, and generally gets away with it because there is a gulf between paper mill and newspaper office that is not yet bridged with cordial co-operation. In the New York World establishment we are at last bringing the two ends of the line together and checking up on causes and effects. Some of our observations may be worthwhile noting; others doubtless have already come within scope of your practical experience.

Practically all waste is due to two causes, namely, external damage to rolls and internal flaws in the paper. The first produces white strip waste, that is the layers of bruised paper which must be stripped off the rolls before they are put in the press, and also press interruptions. The second results in breaks in the press and piles up quantities of crumpled waste, besides the spoiled and incomplete printed copies that follow on every interruption.

Strip waste is caused principally by careless paper handling. Press waste is the product of poor paper making and poor press operation; I won't say which must share the larger responsibility. There are good paper makers and poor pressmen, and vice versa.

I have already remarked that the intrinsic quality of the sheet of standard American newsprint is very good, so good that I am leaving out of these generalizations faults charged to lack of tensile strength, brittleness or other kinds of structural weakness. There is enough poor quality paper, but the percentage that lacks strength to run through the press is small compared with other defects. Practically 90 per cent of the damage and waste in newsprint is due to the following:

1. Bad splices
2. Poor winding
3. Improper wrapping
4. Careless loading
5. Rough unloading and trucking
6. Press room operations.

In this list we have four charges against the mill, one against transportation and one against the newspaper.

Two indictments that I am obliged to sustain against many respectable paper mills are based on bad splices and poor winding.

It is painful to see how carelessly splicing often is done. Some of the common deficiencies are: Paster tape overlapping edge of the sheet with gummed side sticking fast; part of the tape turned gummed side up catching the next layer of paper; overlapping selvage not trimmed off; sheet crumpled at the splice; paper burned with too hot iron.

Nothing seems to irritate the crew of a printing press more than a bad splice. The warning red flag in a roll to slow down is aggravating enough, even if the sheet does go through all right. But let a break occur from a sticky paster, then all paper makers from superintendent down are consigned to the lowest depths of press room purgatory.

We know that breaks will occur and that splices are necessary. Only ceaseless vigilance by superintendents will produce the nearly perfect splice until we get a machine to do it automatically and eliminate the uncertain manual operation.

Because I am not a paper maker I can make sweeping off-hand statements about your business when experts wisely would refrain. Here is one straight out. Judging by the product, good windermen are scarce in paper mills. It is a hard thing to say, but the finest winding I ever saw — smooth, even, true, firm and solid — was on a roll of German paper. It was rotten bad paper in quality, but the winding was beautiful.

Will somebody please tell me why it is necessary to wind ribbons in a roll? Certainly the press room does not want them.

Is there any good reason why folds and flaps and torn edges should be wound in? They are sure to cause press room iterruptions and profanity.

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*Paper read before Association of Paper Mill Superintendents by S. M. Williams, of the New York World and De Grasse Paper Company.

What kind of workmanship is it that winds one end of a roll loosely and the other too tightly, assuming of course that the machine tender has turned out an even sheet. Such rolls wobble in unwinding like a lame duck.

Who is it that winds one roll so tightly that it splits the edges and the next one so softly that it collapses like a punctured tire? These mean many pounds of waste.

I beg of you superintendents to watch the winding and pick out windermen with straight line eyes and calliper hands.

Ninety five per cent of the external damage done to a roll of paper is at the edges around the ends. I don't care much whether the body of the roll has any wrapper around it so long as the ends are well protected. A cut or a dent on the end may spoil fifty or a hundred laps while a similar perforation on the side would not go through ten laps. If somebody devised a practical protector for roll ends and could charge merely a small percentage royalty on the saving he would be rich in a year.

It is largely guessing, but I venture another broad assertion that external damage to ends of rolls amounts to one per cent of the total weight. Our annual U. S. and Canadian production of rolls is to and a half million tons. Say damaged ends cause only one half of one per cent waste. There you have twelve thousand tons of waste which at current prices means nearly a million dollars. Some damage bill, is it not?

Mere weight of wrapping paper is not adequate protection. How and where you put it is the main thing. As the weight of wrapper is included at newsprint prices in the publishers' bill, he naturally is much interested in that. He wants quality more than quantity. Putting on the finest and costliest grade of wrapping paper is not the answer. Soft old bogus may be better than a sulphite grade. The protection most needed is a tough but spongy wrapper that will act as buffer or bumper to guard the end and edges of the roll.

A good standard of wrapping adopted by a number of high class mills is predicted on a roll having an indicated top and bottom and that whenever stood up it must always be on the same end. The body has a single thickness of wrapper; the top has three bands and the bottom at least five bands, plus the over-lapping of the body wrapper, well crimped, and the customary circular end piece which should be securely pasted on. If the end piece comes off, the whole end is liable to be loosened and exposed through handling.

As a rule domestic mills use only paper wrappers, although some Pacific coast rolls we received two years ago were barrelled with wooden staves. However, this may have been originally packed for export. All Scandinavian and German paper now coming to the United States is in wooden barrels, but many of the foreign manufacturers at first made the mistake of giving more attention to protecting the sides than the ends of rolls. Early importations had no end headings at all and the wooden side staves did more damage than good through slipping.

The finest piece of protection I have seen was on a consignment of paper from Holland. I did not know the Dutch made enough paper for their own use, let alone for export, until this lot came to New York. It was encased in wooden barrels, with staves an inch longer than the roll, with circular wooden heads of double thickness, nailed snugly in the ends. The nails were driven so carefully through the side staves that they penetrated between the double heads, thus preventing them touching the paper. In addition there were cris-crossed metal straps over the ends.

Wooden barrelling is too costly for domestic use, both on account of expense and of freight, besides being unnecessary provided proper care is taken with paper wrappers.

Another precaution needed at our mills is in the loading. Car inspection is highly important. Leaky roofs, openings in floors, projecting bolt heads and nails and careless door battening are constant sources of damage to paper. During the war time car shortage, mills often were obliged to take whatever cars they could get. I have seen paper shipped in steel coal cars, which was a great risk. Now, however, no bad order car should be loaded. Turn every one back to the railroad company. Likewise reject automobile cars. They have double doors that cannot be made to close snugly. Put down wrapping paper if car floors are not perfectly sound and tight. Pad stanchions at all doors. Be sure that rolls are packed close and tight. The key roll at each door should be blocked with a 4 x 4 chock nailed to the floor so that there will be no chance for shifting of cargo. If you thing a 4 x 4 piece requires too long nails, use two two-inch blocks nailed over each other. Rolls are liable to jump over anything less than four inches in height.

The old fashioned hand truck, with its sharp, iron toe blade used at railroad stations, and sometimes in mills, is another enemy of paper. Short rolls rest wholly within the truck, but frequently long rolls are allowed to overlap on the iron blade for better balance. Dents and disturbing pressure result from this. If you use hand trucks, cover the toe blade with a wooden shoe.

When the mill force has done well its wrapping and loading, its direct responsibility for what happens afterwards ceases, since selling f.o.b. shipping point has supplanted the former sidewalk delivery system. A great deal can and does happen to paper in transit, more of the damage being done at terminals than en route. To a freight handler, a roll of paper is not a great, big baby to be coddled tenderly, but a bulky, awkward nuisance to be treated like the joke book baggage smasher deals with a trunk.

Invariably it is the end of the roll, and particularly the tender, susceptible edge, that gets the worst of it — banged, bounced and bumped at every turn. The ideal handling would be to have the roll always on its side, ever up-ended. We experimented recently with paper from a mill near enough to New York to permit of automobile transportation. At no time in its existence from paper making machine to printing press was the roll stood on end. Result: practically no damage, no waste, no breaks in the presses.

Now, we come to the final test of all paper—the printing press wherein is revealed its strength or weakness, its perfection or flaws. I am radical enough, or reckless if you prefer, to say that I care little for the customary tests to determine paper quality. The eye for appearance, the ink for finish and the press record for strength compose the real jury, no matter what instruments or analyses may show.

The so-called pop test is good as far as it goes, but it does not cover one tenth of the possible flaws in a sheet. I have seen paper stand very high pop test and give great trouble in the press room; and sometimes exactly opposite conditions may prevail. The press room waste report tells the true story whether paper is good or bad. What newspapers went is a sound, undamager roll, well wound, cleanly spliced, free from cracks, smoothly calendered and of even quality. With such paper there will be a minimum of waste, regardless of whether the pop test is high or low.

When paper tears apart as it unwinds and before it passes under the press cylinders, we call it a break. When the sheet clogs, jams or parts in the press, making a mess of waste in the machinery, it is a choke. Pressmen charge most of their breaks and chokes to splits or cracks in the edge of the sheet; to calender cuts; to sticky pasters and to wobbly rolls.

Can anyone tell me what causes the small, often invisible edge crack? Doubtless there are many causes. I have a theory that uneven winding plus rough handling is an important factor. When a roll is tipped up or dropped so that the weight falls on the edge, lateral strain results. If the winding is not perfect, the strain is not evenly distributed and presses hardest somewhere against the edge of the sheet, either weakening to an invisble crack, or bursting it apart for several inches. Doubtless you gentlemen know of other certain or possible causes, but the fact remains that the crack is one of the most frequent flaws found in paper. I do not credit every press room report charging cracks in paper as an indictment against either mill or transportation. There is such a thing as uneven tension in presses and uncertain human equations in press crews.

The press room almost always lays the blame for interruptions of every kind to some flaw in the paper. It is human nature to pass the buck and to charge the responsibility to some other fellow. External damage to rolls can be detected, but the tangible evidence of flaws wound in the roll is generally lost in the crumpled mass of press waste.

It is not fair to hold the mill superintendent for every failure of the fragile sheet to run the gauntlet of strains and rough usage endured on the long road from spruce tree to the printed newspaper. I marvel that your product comes through so well as it does. But by more watchful care and closer co-operation all along the line each doing his part, we can hope to reduce the tremendous bill for waste newsprint that averages from three to five per cent of the total production, amounting at present prices from six million to ten million dollars annually.

BARKING DRUM INSTALLATION

The Canadian Ingersoll-Rand Company have been very successful recently in marketing a number of their Paulson Patented Barking Drums. Amongst their more recent orders are 2-10′ by 30′ barking drums for the St. Lawrence Paper Mills, being installed at Breakeyville, Que.; and an 8′ x 20′ washing drum for the mill at Three Rivers, Que.; a 10′ x 30′ for Price Brothers, at Kenogami, Que.; a 10′ x 30′ for Price Brothers at Montmagny, Que.; a 10′ x 30′ for the Gulf Pulp and Paper Company, Clark City; a 12′ x 45′, three section, for the new Brooks-Backus mill at Kenora; two 12′ x 45′, three section drums, for the Anglo Newfoundland Development Company, Grand Falls, Newfoundland."

The human mind cannot find rest in triviality.

WHERE "AMERICAN" PULP STONES COME FROM

Mr. S. A. McLernon, the manager of the pulp and paper mill machinery and supply department of Canadian Fairbanks Morse, has just returned from Littleton W. Va., where he visited the quarries and plant of the American Pulp Stone Co., Canadian Fairbanks Morse Co., Ltd., are exclusive Canadian sales agents for the American Stone Co., Littleton W. Va.

There are plenty of Pulpstones in these ledges.

One of the most striking features of the Littleton quarry is the enormous extent of ledge which is shown in the illustration.

Some Magazine Grinder Stones ready for shipment.

The American Stone Co., report a keen and growing demand for their large size magazine stones as well as ordinary pocket grinder stones, and Mr. McLernon was very much impressed by the activity at the Littleton quarries.

Technical Section

REVIEW OF RECENT LITERATURE

A-1 Oxidation of the Methyl Ethers of Lignin and Ligninsulphonic Acid. E. HEUSER and S. SAMUELSON. **Cellulosechem.** iii, 78-83 (1922). By repeated treatments with methyl sulphate and 10% sodium hydroxide at 65 to 70°C, the methoxy value of ligninsulphonic acid was raised from 13.07 to 25.43%, and that of lignin isolated by Willstatter and Zechmeister's method from 14.15 to 26.05%. These methoxylated products were oxidized by alkaline permanganate in the cold end and at 90°C, and also by alkali peroxide at 45°C., in the hope of obtaining some oxidation product having a constitutional relation to the original lignin. Nothing characteristic could be isolated. In the oxidation of methyl-lignin by alkaline permanganate only 55.65% of the original carbon could be accounted for, 44.76% in the form of carbon dioxide and 10.69% in the form of oxalic acid. Volatile acids, which were calculated as acetic acid, amounted to only 0.9% of the material taken. — I.G.

A-3 K-18 Reeds as Material for Cardboard Making C. UHLEMANN. **Papierfabr.** xx, 962-965 (1922). A description of the process used at the Muldental works, Germany. A yield of about 30% of good pulp is obtained. — I.G.

E. — Acid Process of Pulp Manufacture and Equipment

E-5 Degasification of Sulphite Digesters. ZELLSTOFFABRIK WALDOF. Ger. patent 350,741. The gases and vapors which are removed from the digester are passed through fresh liquor in a tank close to the digester. It is claimed that large quantities of heat which would otherwise be lost are thus made available, and that there is a considerable increase in the amount of SO_2 recovered from the digester. — I.G.

E-5 F-5 Should the Digester be Insulated? F. HOYER. **Papierfabr.** xx, 993-997 (1922). A discussion of the various insulating materials and compositions which can be used in insulating digesters and of the advantages gained thereby. — I.G.

E-2 Uses for Sulphite Waste Liquor. Papierfabr., April 27, 1920; **Paper,** xxvi, No. 23, 19, 30, 32, (Aug. 11, 1920). Description of various German patents for the utilization of sulphite waste liquor for adhesives and cutting oils. — No. 239,675, ERNEST TRAINER. The adhesiveness and the solubility in water of the concentrated liquor is decreased by electrolyzing it, the current being periodically reversed. — No. 236,035, A. STUTZER, Koenigsberg, Prussia. The sulphur dioxide and sulphuric acid are precipitated by treating the liquor, while hot, with ammonia or ammonium and calcium carbonates. The precipitate is filtered off and the liquid evaporated until it forms a very thick fluid or solidifies or cooling. — No. 274,084, E. POLLACSEK. A slight excess of quicklime is added, and the liquor is concentrated and when it begins to foam a heavy petroleum distillate is added drop by drop to envelope the precipitated calcium compounds. The mixture of oil and lime salts is skimmed off and the oil recovered. After further concentrating the liquor, about 4 per cent of heavy oil is thoroughly mixed in and it is rendered insoluble in water by adding 5 parts of heavy oil to 4 parts of concentrated liquor. It is then mixed with one and a half parts of lime paste and brought to a boil. The resulting product may be used as a cement for pulverulent and finely granular substances insoluble in water, or for impregnating water, rope, etc., being mixed with varying proportions of slaked lime, debenzenized crude oil and water. — No. 311,557, GERTRUDE HILDERBAND. To the concentrated solution of 100 parts of spent liquor obtained in the usual manner, 10 to 20 parts of sodium phenol are added, and the mixture is heated with stirring to 100 to 120 degrees C. until a perfectly transparent mass is obtained. Carbon dioxide or hydrogen sulphide is passed through th mixture until the free alkali is nearly all neutralized. The liquid is then evaporated under vacuum to a syrupy consistency. The adhesive thus formed can be thinned by the addition of waterglass without reducing its adhesive power. — No. 316,234, KARL HUTTENES. Adhesive is produced by adding lead acetate to waste liquor and then evaporating it. — No. 302,937, HUTTENES and GERLING. A cutting oil is made by saponifying the liquor with alkali, heating to 60 to 70 degrees C. and stirring vigorously. — No. 316,028, FUCHS. The lignin acids are precipitated from solution of their alkali salts by adding acid (usually hydrochloric). The liquor and precipitant are heated to 70 to 95 degrees, allowed to stand, the precipitate filtered off, mixed with one-tenth its weight of caustic or carbonated alkali, mixed with enough water to form a 25 per cent solution, and boiled until th solution is clear. The resultant product can be used as a substitute for lubricating or cutting oils. — No. 302, 484, KURT ALBERT and LUDWIG BEREND. One part of the liquor is emulsified with two to three parts of tar oil or fluid mineral oil, or solutions of hard and soft fats, waxes, ozokerite, paraffin rosin, etc., in suitable solvents or oils, the solution being neutralized, etc., may also be added. — No. 302,188, KIRCHBACH & CO. Graphite, talc, or other minerals, are mixed with the liquor to make a lubricant for machine parts subject to friction. —2A.P.-C.

F. — Alkaline Process of Pulp Manufacture and Equipment

F-4 Scott Evaporators as Used in the Pulp Mill H. AUSTIN. **Paper Trade J.** lxxv, No. 11, 65-67 (Sept. 14, 1922). The design of black liquor evaporators is discussed. Attention is called to the fact that the use of exhaust steam has not been given due consideration in the past. A description of the Scott evaporator is given. Its advantages are: ease of repair, removal, and replacement of the tubes. — I.G.

F-4 Removing Waste Furnace Gases. ZELLSTOFFABRIK WALDOF. Ger. patent 353,832. Addition to Ger. patent 304,999. The gases are used in place of, or in mixture with, primary air in a gas producer. The gases are thus burnt, and part of them may be used as secondary air in burning the combustible gases generated by the producers. — I.G.

F-4 Purification of Alkali Liquors. FR. KUETTNER KUNSTSEIDENSPINNEREI and E. PROFELD. Ger patent 355,836, Aug. 7, 1922. The liquor is treated in cold with an oxidizing agent, e. g., hydrogen peroxide, sodium peroxide, etc., in the presence of a catalyst such as copper, lead, etc., preferably in a vessel made of the metallic catalyst. The dissolved cellulose derivatives are precipitated on to the surface of the metal , thereby decolorizing the liquor. The larger the surface of the metal the more complete the purification. — I.G.

F-4 Electrical Purification of Gas in Pulp Mills. FIESEL. **Zellstoff u. Papier** ii, 165-167 (July 1922). A description of various apparatus made by the Metallbank und Metallurgischen G. m. b. H., which are useful for the purification of the roasting oven gases, but which may also be used in the purification of the waste gases derived from the drying ovens, liquor evaporators, etc. — I.G.

F-5 Heat Conditions During the Cooking of Sulphate Pulp. H. BRAHMER. **Svensk Pappers-Tid.**, xxiii, 269, (1920) ; **Chems. Abs.**, xv, 170, (Jan. 10, 1921). The results of extensive investigations are shown in 26 diagrams and graphs. In the Sandberg-Sundblad heat systems part of the heat of the black liquor is used in the form of steam for indirect evaporation in Kestner apparatus. The steam is produced in two boilers simultaneously, one stoked with purchased fuel, the other with the dry residue from the black liquor. Part of the steam is led to the evaporation apparatus from which is obtained low-pressure steam, which, mixed with fresh steam, supplies the drying machines. Another part goes to the digester and the rest is used for incidental purposes. The production of steam in the seam-producing processes associated with the manufacture of sulphate pulp by the Sandberg-Sundblad system is essentially a function of the water content of the wood and of the white liquor. The saving of this water, or so-called water economy, is therefore of grat importance. Effective water economy can save over 2 tons of steam per ton of pulp. The digesting process, when the escaped steam can be saved, is insignificantly steam consuming and may somestimes be steam- producing. The reaction heat produced in the digesting of strong pulp is 1.2 per cent of the heat of burning of the wood as determined by the bomb calorimeter. The specific consumption of fresh steam can be 50 per cent higher in stationary digesters than in rotary digester. The total consumption of steam in bleached pulp compared with strong pulp is inversely proportional to the yield of the pulp. Indirect digesting of strong pulp has no heat-saving quality worth mentioning in the Sandberg-Sundblad system, if the evaporation apparatus is sufficiently large and the waste steam can be used. The production of sulphate according to the Sandberg-Sundblad system can be made self-supporting if the water economy is effectively carried out, and the production can be raised to 60 to 70 per cent in the soda pans. — A.P.-C.

F-0 Investigations Relating to Digesting Wood With Alkali. P.WAHLBERG. **Svensk Pappers-Tid.**, xxiii, 294, (1920) ; **Chem. Abs.**, xv, 170-71, (Jan. 10, 1921). Examination was confined to colloidal lignin solution from sulphate waste liquor, to obtain, if possible, some of the separate constituents. The waste liquor was dialyzed in an apparatus similar to a filter-press. Parchment membranes were used and water was run slowly through alternate compartments in a direction opposite to the liquor, thus giving a rather concentrated solution. The time required was from one to two weeks. The resulting solutions were dark brown, clear and neutral but got muddy on standing. At 50 degrees C. the solution becomes gelatinous and a slimy mass containing 95 to 96 per cent of water separates on boiling. The solution coagulates with small amounts of salts and acids. Electrolysis separates the bulk at the anode and a small amount of brown substance at the cathode. Sodium bicarbonate, ammonia, and other bases in small amounts dissolve the coagulum easily and dialysis of this solution gives the colloidal solution again. The coagulation caused by heat after washing with warm water and alcohol becomes black and friable when dry, also insoluble in all the usual solents though alcohol acidified with hydrochloric acid will dissolve it. Further study indicates that the solutions obtained by dialysis do not contain any single substance. The presence of resinous and lignin substances were indicated. — A.P.-C.

F-0 Process for Making Pulp from Highly Lignified Plants. C. A. BRAUN. Ger. patent 309,181 and 309,-236. **No. 309,181.** Groundwood is treated in a digester under pressure at a temperature up to 150° C. with 500 liters of liquor containing 30 kilos of sodium sulphite and 8 kilos of sodium sulphide for every 100 kilos of wood, and is boiled until the SO_2 content of the liquor is reduced to 0.4 to 0.5%. This takes about 6 hours. The material can be beaten and gives a light yellow pulp, which is stronger than kraft. Tested with a solution of phloroglucin it still shows a slight red coloration. **No. 309,236.** In making pulp from plants such as flax straw, nettles, etc., it was observed that the pulp, after digesting, was intensely green. The disintegrated raw material is digested as above with 25 kilos of sodium sulphite, 5.5 kilos of sodium sulphide, and 2.5 kilos of caustic soda, per 100 kilos of wood, which removes the green color. — I.G.

F-0 The Technical Utilization of Chlorine for the Decomposition of Vegetable Fibers. P. WAENTIG. **Papierfabr.** xx, Fest-u. Auslandheft, 67-71 (1922). The difficulties encountered in the technical application of the disintegration of vegetable fibers by means of chlorine are not so great as to cause the process to be abandoned. The advantage of the process is that it affords an outlet for the chlorine produced in the manufacture of electrolytic soda. It also yields hydrochloric acid as a by-product, which can be used for the treatment of phosphate rock, for the manufacture of sugar from wood, etc. — I.G.

F-0 The production of Sulphate Pulp. Odors and Rational Operation. WILLI SCHACHT. **Papierfabr.** xx, Fest-u. Auslandheft, 71-79 (1922). The various sources of odors during digestion of the pulp and recovery of the soda are described. Dimethyl sulphide and sodium mercaptan are separated out by means of a special grade of absorbent charcoal ("A carbon"), manufactured by F. Bayer & Co., and can be used for the manufacture of pharmaceutical products. — I.G.

G. — Pulp Treatment and Drying — Operation and Equipment

G-7 Refiner. Can Patent No. 212,209, SHERBROOKE MACHINERY CO., assignee of A. J. HAUG, May 31, 1921. Also U.S.A. Patent No. 1 302,469, April 29, 1919. The stock is fed through a hopper into a casing containing a suitable number (preferably 4) of rolls which rotate about their respective axes and also the whole series of rolls rotates bodily, crushing the material against the casing. The rolls are driven positively, to prevent excessive slipping, but at such a

(Continued on page 1030)

PULP AND PAPER NEWS

The Canadian Pulp and Paper Association was represented at the fall meeting of the Newsprint Service Bureau, held in New York, on November 15 and 16, by Mr. Geo. M. McKee, president of the Association; Mr. J. A. Bothwell, Brompton Pulp and Paper Company; Mr. Edward Beck, secretary, and Mr. A. E. Cadman, assistant secretary. The feature of the meeting was an address by Mr. Philip T. Dodge, president of the International Paper Company, who has just returned from a visit to the principal European countries. He reviewed business conditions there, and naturally spoke of those which bear on the paper industry. His opinion is that newsprint producers on the American continent have no reason to fear European competition, because there is every indication that sooner or later newsprint manufactured in Europe will find a market on that side of the Atlantic.

One of the surprises of the British elections is the success of Mr. Ralph Hall Caine, who spent several months in Canada this year in the interests of Becker and Company, Limited. Mr. Hall Caine defeated Captain Guest, late Air Minister in the constituency of East Dorset, where the Guest family exercises considerable influence. Mr. Hall Caine was only before the electors two weeks, and stood as an independent Conservative against the official Conservative nominee. He had the strong backing of Lord Beaverbrook.

The Export Club of Montreal had decided to break away from the Canadian Manufacturers' Association and to start a wider organization under the name of the Overseas Trade Association. The association will still work in harmony with the C. M. A. The president is Mr. V. G. Bertram, Canada Carbide Co.; first vice-president, Mr A. D. Huff, Riordon Company; second vice-president; Mr. G. Bermington, W. R. Grace and Co., and secretary-treasurer, Mr. N. P. Woods, Shawinigan Water & Power Company. The executive includes the following who are interested in the pulp and paper trade: Messrs. H. Williams, A. Ginger and Guy Tombs, Mr. Huff is chairman of the Constitution Committee and Mr. Guy Tombs chairman of the Transportation Committee.

The waste paper warehouse of Levi Brothers, 174 Don Esplanade, Toronto, was almost entirely destroyed by fire of unknown origin on Nov. 13. Filled with waste paper, wiping rags and other similar combustible material, the two buildings of wooden and galvanized iron construction were soon enveloped in flames and the work of the firemen was rendered hopeless. The damage done is estimated at $10,000, half of which is covered by insurance.

According to estimates of Port Arthur lumber companies approximately 248,000 cords of pulpwood will be cut in the district this winter. Of this amount 165,000 cords is for export and 93,000 cords for local use. In addition large contracts have been awarded for taking out ties, some of which are as follows: C. W. Cox, at Lake Nipigon for railroads, 150,000; Earl Greer for the C. P. R. 150,000; Thomas Falls, 125,000; E. E. Johnson, 100,000; J. J. McKeown, 50,000; other smaller contracts, 75,000

The Canadian National Newspapers and Periodicals Association at its annual meeting in Toronto elected the following officers: President, H. T. Hunter; vice-president, Dr. S. W. Fallis; directors, Acton Burrows, Major H. C. Maclean, Rev. D. M. Solandt, R. M. Burns, Lionel Davis, H. McKnight, H. V. Tyrell, N. R. Perry, W .A. Lydiatt, T. S. Young, R. B. Faith, J. A. Cohagan, T. J. Tobin, executive committee, Acton Burrows, Rev. Mr. Solandt, Lionel Davis, N. R. Perry, T. J. Tobin and W. F. Harrison, manager.

Enquiry at the head office of the Mattagami Pulp and Paper Company in Toronto reveals the fact that the company, which is in receivership, is now operating on a profitable basis. The company's plant is at Smooth Rock Falls, west of Cochrane and the mills are busy turning out sulphite pulp, the market for which is showing definite improvement. It is stated that the future is still indefinite as far as the company is concerned, but the satisfactory improvement in the sulphite market makes the outlook appear very hopeful. It is stated that when the inevitable reorganization comes the shareholders are likely to have a substantial interest. Mattagami has a capitalization of 20,000 shares preference and 50,000 shares of common stock, of which 30,000 shares were held for debenture conversion. There are outstanding also $1,856,000 of 6 per cent. first mortgage bonds, and $3,000,000 of 7 per cent convertible debentures. No interest has been paid for some time on either debentures or bonds.

To carry on business as stationers and office supplies, J. H. Damp & Company, Limited, has been organized in Toronto and has been granted an Ontario charter with an authorized capital of $40,000. Among the incorporators are F. J. Hughes, A. T. Maher and F. J. Sullivan.

Sixty members of the Standard Mining Exchange, Toronto, who, recently toured Northern Ontario, visited the big pulp and paper plant of the Abitibi Power and Paper Coompany. The members expressed surprise at the extent of the company's plant, which is the largest for the manufacture of newsprint on the continent. The visiting members were likewise impressed with the hospitality extended to them by the Abitibi company who were lavish in their entertainment.

L. A. Alstead, who is anxious to establish at $3,500,000 pulp and paper mill in the Nipigon district was at the Parliament Buildings in Toronto last week and was told by Premier Drury that no satisfaction could be given him in the matter of securing the power franchise necessary for his enterprise from the Hydro Commission or from the Drury Government. The project which Mr. Alstead presented was the Great Lakes Pulp and Paper Company development which has lately been prominently before the public eye because of the Hydro's failure to agree to a contract for the 10,000 horse power of energy for which it is a prospective customer. The principal point at issue between the company and the Hydro is the refusal of the latter to draft its contract in terms which shall make it enforceable in the sight of the Great Lakes Company's lawyers and which will make it possible for them to use it at their bankers for financing purposes. Although the matter is being delayed it is believed that it will eventually be adjusted satisfactorily to the parties concerned.

Gordon E. Edwards, of Ottawa, President of W. C. Edwards & Co., Limited, and of the Edwards Lumber and Pulp Co., Limited, has been elected a director of the Canadian Bank of Commerce. Incidentally, also, Mr. Edwards, on Nov. 12th celebrated his 56th birthday. The new bank director is a past president of the National Wholesale Lumber Dealers' Association and of the Canadian Lumbermen's Association. He is also a director of the Bathurst Company.

Mr. Dan Daverin, who has just resigned as superintendent of the Montrose Division of the Provincial Paper Mills, Ltd.

It was learned this week that Kilgour Bros., paper bag manufacturers, 21 Wellington Street, W., Toronto, have had plans drawn for a $100,000 paper bag factory at Windsor Mills, Quebec. The proposed plant will be of mill and brick construction. 90 x 120 feet and two storeys in height. It is understood that tenders will be called for shortly.

R. A. McInnis, Manager of the Abitibi Pulp and Paper Company, Iroquois Falls, Ont., addressed a Board of Trade gathering in Toronto on Nov. 15, in which he stressed the need for more and better roads in Northern Ontario and urged the needs of agriculture and of the lumbering, mining and pulp industries. Northern Ontario's settlement and development problems, he declared, were primarily those of older Ontario, because it is to the newer sections that established industries must look for future markets.

Work has been commenced on a new paper box plant for Lawrason & Doughty, 42 Church Street, Toronto. The company are building their new factory at 7-9 Hamilton Street, Toronto. It will be three storys and basement, the dimensions being 50 x 100 feet, and will be of mill and brick construction. The estimated cost is $150,000.

W. Gorman, manager of the Montreal office of the Provincial Paper Mills Company, Limited, was at the head office of the company in Toronto last week en route to Australia where he will spend several months on business for his firm. Mr. Gorman left Toronto on Nov. 18 for Vancouver, his sailing point. Arthur Jewett will have charge of the Montreal office during Mr. Gorman's absence.

An Ontario charter has been granted to the Adanac Lumber & Manufacturing Co., Limited, of Toronto, with a capital stock of $40,000. The charter authorizes the company to engage in a general lumber and pulpwood business.

Dan Daverin, for the past nine years Superintendent of the Montrose mill at Thorold, Ont., of the Provincial Paper Mills, has resigned his position with the company. He has been succeeded by C. F. Bus, who has been Superintendent of the St. Lawrence Division at Mille Roches, and who has been made General Superintendent of both the Mille Roches and the Thorold mills. Gus Conarroe will be the Assistant Superintendent of the Thorold mill and E. Stansel will occupy a similar post at the Mille Roches mill.

As was expected, the creditors of the Riordon Company, Ltd., granted the request of the company for an extension of time to Nov. 1923. It is understood that the new arrangement has been fully approved. In the meanwhile, the conditions undulying the pulp industry continue to improve.

It is reported from Toronto that the Great Lakes Paper Co., and the Hydro-Electric Commission have come to terms. This was said to be the reason for the delay in this development. Further details will be given in an early issue.

Hon. Beniah Bowman, Ontario Minister of Lands and Forests, has returned to Toronto after a visit to Port Arthur and other points in Northern Ontario on a tour of investigation of power matters. Hon. Mr. Bowman was impressed with the development of work being carried out by the Provincial Paper Mills, Limited, on the Port Arthur division plant, and was informed that the company expected to have the new paper mill unit in operation some time in February. The Minister also inspected the work undertaken by the Thunder Bay Paper Company since it took over the Kaministiquia, and was informed that the company is already spending some $125,000 on improvements and are employing seventy-five men.

Mr. C. F. Buss, who has been appointed General Superintendent of the Montrose and Mille Roches plants of the Provincial Paper Mills, Ltd.

rate as to have a certain amount of friction instead of true rolling contact, thereby exerting a drawing out action on the fibers. Means are provided for positively feeding the stock through the chamber and discharging it at the end. — A.P.-C.

G-12 K-5 The preservation and Bleaching of Groundwood. **Papierfabr.** xx, 922-924 (1922). Drying is expensive and can give rise to trouble in the subsequent breaking up of the pulp. Dried pulp is generally darker and not so strong as wet pulp of the same quality made from the same wood. Drying is best carried out by air-drying thick boards at a low temperature. Groundwood should be piled in sheds protected from dust, smoke, and strong winds. They should be well ventilated. Chemical preservatives have not been found of much use. Bleaching is carried out with calcium hypochlorite (?), or calcium or sodium bisulphite. — I.G.

H. — Bleaching, Bleach Manufacturing and Equipment

H-5 Bleaching Fibers with Hypochlorite. ZELLSTOFFABRIK WALDHOF. Ger. patent 352,845. It has been found that a strong bleaching action is obtained when the material is treated first with acidified and then with alkaline hypochlorite solution. A sample of sulphite treated at 30° C. with 15% of chloride of lime in alkaline solution consumed about 12% bleach. The same amount of sulphite treated with 15% of bleach at room temperature in a solution acidified with carbon dioxide also consumed about 12% of bleach. A sample was treated first with 10% of bleach in acid solution (consumption 7.25%), and then with 5% of bleach in alkaline solution at 30° C. (Consumption 3%). By combined acid and alkaline bleaching a saving in bleach is affected. The proportions of bleach used in the two stages of the bleaching may be varied at will; but the total amount used must always be the same. — I.G.

H-5 Influence of Chlorine Bleach on Cellulose Fibers. BRUNO POSSANER VON EHRENTHAL. **Wochbl. Ppierfabr.** liii, No. 22A, 51-53 (1922). The chlorine consumption and bleaching action increased with the degree of beating. Curves are given showing the effect of the variation of different factors. — I.G.

K — Paper Making and Equipment

K-2 L-7 Material Suitable for Spinning from Paper Waste. ADOLF KUBE & CO. G. m. b. H. Ger. patent 352,402. The paper waste is treated in the beater in the usual manner and is made into very thin crepe paper, which is preferably treated in the web with a solution of alkali (e. g., caustic soda) or of bisulphite. This paper is well suited for spinning. — I.G.

K-4 Removal of Printing Ink from Waste Paper. B. HAAS. **Chem. Zeit.**, xlv, 913-917, (1921); **J. Soc. Chem. Ind.**, xl 765, (Nov. 15, 1921). Newspapers are the most important source of waste paper, and this paper contains 80 to 85 per cent of short-fibred mechanical wood pulp, 8 to 10 per cent of longer fibered chemiacl pulp, about 5 per cent of filling material and hardly appreciable amounts of binding materials. For loosening or decomposing the binding substances of the printing ink so that it may easily be removed and washed away, the best results, technically and economically, were obtained by the use of soda ash which does not cause any subsequent darkening or yellowing of the mechanical of wood pulp portions of the mixed fibers, and therefore eliminates the sorting of the waste material according to the proportion of chemical and mechanical wood pulps. This reagent readily loosens the printing ink, which is then easily removed. The mixed waste is sorted, disintegrated and then treated with the reagent in a grinding and washing hollander until the material becomes uniformly greyish-black in color, when it is well washed and dischargd. Alternatively the material may be treated with the reagent in a circular, rotating, steam heated boiler and subsequently washed in the hollander. — A.P.-C.

K-4 Recovering Waste News Print. S. KUMAGAE and T. CHIBO. Ger patent 356,742. Water is added to about 80 kilos of old news print and vigorously agitated. Then 110 liters of a liquor recovered from the manufacture of a foodstuff, known as tofu, made from the soy-bean in Japan, about 2.5 kilos of soap and 2.5 kilos of sodium thiosulphate are added. The entire mass is boiled for half an hour, pressed for two or three hours in a suitable press, and the printing ink is removed by washing. — I.G.

K-4 Deinking Waste Newspapers by means of Benttonite. H. B. EYRICH and J. A. SCHREIBDER. Ger. patent 353,024. Same as U. S. A. patent 1,421,195, June 27, 1922, and Can. patent 222,060, Aug. 8, 1922. See this journal xx, Sept. 21, 1922. — I.G.

K-4 Chemical and Mechanical Treatment of Raw Materials for Paper Manufacture. O. HERDEY. Ger. patent 352,693. A digester and a mechanical disintegrator are connected together with a rotating mixer in between. The stock is fed from the digester to the mixer, and thence to the disintegrator. — I.G.

K-4 L-7 Process for the Treatment of Short Fibered Raw Material for Paper. for Spinning. EXPORT-INGENIEURE FUR PAPIER UND ZELLSTOFF-TECHNIK, G. m. b. H. Ger. patent 305,148. The fibers are treated in a kollergang and then dried. They are then treated either in a vacuum or under pressure out of contact with air with alcohol, benzene, benzine, acetone, spindle oil, fatty acids, or soap solution, or with a mixture two or more of these substances or with water. The material is used for spinning purposes. — I.G.

K-4 Purification of Rush and Typha Fibers. J. ELSTER. Ger. patent 355,023. The raw fibers are subjected to the action of strong solutions of caustic soda, caustic potash, sodium sulphide, etc. The lower the temperature at which the process takes place, the more dilute the solution of the chemicals should be.-I.G.

K-5 Treatment of Linen Fiber. C. G. SCHWALBE. **Wochel. Papierfabr.** liii, No. 55A, 54-58 (1922). In paper making linen fiber is treated with slaked lime or with caustic soda under pressure at a high temperature. The digesting of the fiber takes place in several stages. The preliminary treatment with malt preparation, the use of emulsifying agents and of hydrogen peroxide are described. — I.G.

K-7 The Fine Hollander. A. HAUSER. **Wochbl. Papierfabr.** liii, No. 22A, 97-100 (1922). A description of the construction of this type of beater. — I.G.

K-7 Beater. E. and O. MASSART. Ger. patent 354,672. Same as Fr. patent 522,794. See this journal, xx, 818, Sept. 21, 1922. — I.G.

K-7 Changes During Storage of Beaten Jute Half-Stuff. E. W. L. SKARK. **Papierfabr.** xx, 881-886, 917-922, 957-962 (1922). The color and character of jute half stuff differ considerably according to whether the bagging has been boiled with lime or caustic soda. The degree of digestion also has considerable effect on the fiber. When boiled with lime it bleaches to a bright yellow color; with caustic soda, to a dull brownish-yellow color, unless the degree of digestion has been so complete that a dull white is obtained. The length of time that the material remains in the drainer chests determines the behavior of the different types of half-stuff in the beating operation. Half -stuff lightly boiled in caustic soda is dull in color, but the color becomes duller during storage. Jute boiled with caustic soda with the addition of sodium sulphide is capable of being bleached to a full white. Storage had a mellowing effect. — I.G.

K-7 The Story of the Beater. ALFRED HAUSSNER. **Papierfabr.** xx, Fest-u. Auslandheft, 129-148, regular issue 805-814 (1922). A detailed history of the development of the construction of the beater. All the different parts of the machine are discussed, and attention is paid to the operation of the machine and changes made therein. — I.G.

K-8 The Coloring of Paper. H. DIERDORF. **Papierfabr.** xx, No. 23A, 52-55 (1922). A list is given of dyestuffs suitable for cheap paper and of those suitable for finer papers. The coloring of paper containing a large percentage of groundwood, coloring on one side, on the calender and the color dip machine, and the dissolving of the dyestuffs are discussed. — I.G.

K-8 Effect of Temperature and Salting Out Agents on the Retention of Dyes by Paper Pulp. H. A. BROWN and L. S. HATCH. **Paper Trade J.** lxxv, No. 6, 49-53 (Aug. 10, 1922). A review of the literature is given. Experiments were made with bleached sulphite and different dyes (Victoria blue B, Pontacyl blue black SX, etc.). Basic dyes are retained by bleached sulphite with no appreciable loss up to a concentration of 9.5 lb. at room temperature. Basic dyes are well retained by well sized paper. Elevation of temperature increase the retention of acid dyes. The addition of alum improves the retention of the dyes. Direct dyes are retained completely up to a concentration of 12 lb. per 1,000 at room temperature without the addition of any salt. Conditions of dyeing paper vary so much with the use of different kinds of paper and different kinds of dyes that it is impossible to prescribe any exact directions covering all cases. Each mill that makes colored papers should have an experimental dyeing plant to test out the different dyes used to determine the best conditions of use. — I.G.

K-9 Process for Loading Paper. K. JOOST. Ger. patent 354,544. In rosin sizing sodium sulphate is formed due to the decomposition of the rosin soap with aluminum sulphate or free sulphuric acid. Calcium chloride is added in the beater to precipitate calcium sulphate, which makes good filler. — I.G.

K-10 K-23 Sizing and Impregnating Paper with Humic Acid. L. UBBELOHDE. Ger. patents 303,324, 305,006 305,010, 307,098. **No. 303,324.** Paper is impregnated with an equeous or alkaline solution of humic acid and dried. The paper thus treated possesses the properties of a sized paper. It may also be used in the supplementary sizing of paper or of articles made of paper. **No. 305,006.** The crude extract obtained by treating humus containing materials (peat, brown coal, etc.) with alkali can be used instead of a more or less pure humic acid. It may be precipitated with acids or metallic salts. **No. 305,007.** The dark color of the crude extract may be partially removed by bleaching with chlorine or other bleaching agents. The partially or completely bleached product, or portions obtained by fractional precipitation, may be used for sizing. **No. 305,008.** Fractional extraction of the humus containing material with alkali, in which the material is extracted repeatedly with the same or different alkalies, gives a series of products which behave differently when used as sizing agents. These solutions are not clear but more or less turbid due to the colloidal nature of the humus. **No. 305.009.** The sizing properties of humic acid or its salts are considerably improved by the addition of small amounts of such substances as water glass, wood tar, coumarone resin emulsion, vegetable glues, etc. **No. 305,010.** The sizing properties are also improved by the addition of small amounts of rosin or of animal size. **No. 307,098.** The sizing quality is improved by precipitating the humic acid solutions with ferric sulphate instead of the ordinary precipitating agents.-I.G.

K-10 Rosin Sizing. R. SIEBER. **Zellstoff u. Papier** ii, 99-103, 134,-139 (1922). The influence of sulphate of alumina on rosin milk in the presence of salts which produce hardness in water, and also of acids, and the precipitation of the size in the presence of the cellulose fiber, are described. Precipitation of the rosin, which exists as a fine suspension, especially in the case of free rosin, can scarcely be considered as being effected by the colloidal hydrate of alumina which is formed by hydrolytic action. Pure reactions take place in the process of sizing in addition to reactions in which the laws of colloidal chemistry play a part. It is brought out that sulphate of alumina is an essential reagent in the sizing of paper with rosin in all its different forms. (Translation by I. Ginsberg in **Paper Trade J.** lxxv, No. 16. 43-46 (Oct. 19, 1922). — I.G.

K-12 Method of Feeding Pulp to Paper Machine Wires. Can. Patent No. 212,197, AMERICAN COATED PAPER CO., INC., assignee of F. P. REED, May 31, 1921. The apron and slice are completely eliminated, their place being taken by a sloping surface or dam oer whichv the pulp flows directly on to the wire. It is claimed that this results in an even distribution of the fibers in all directions giving practically equal strength in all directions. Also, the head box is provided with an internal overflow chamber, having a vertically adjustable plate to regulate the height of stock passing over the dam, and by means of which the foam is skimmed off. — A.P.-C.

K-12 M-6 Electric Drive for Paper Machines with Papeterie, xlii, 641-645, (July 25, 1920). Translation by A Papineau-Couture in **Paper**, xxvi, No. 28, 19-20, (Sept. 15, 1920). The greater part of avoidable shut downs are caused by improper working or insufficient capacity of the dryers. Their influence on output, quality, and cost of production is discussed, together with the great advantages of having a properly working battery of dryers. — A.P.-C.

K-12 M-6 Electric rive for Paper Machines with Rapid Regulation. W. STIEL. **Svensk Pappers-Tid.**, xxiv, 48-53, (1921); **Chem. Abs.**, xv, 1993, (June 20, 1921). In order to ensure a speed for paper machinery which shall be constant, free from variations due to outside influences and capable of considerable range, Stiel suggests electric drive and shows by two diagrams the wiring and connections for the electric regulators (shown in 5 cuts). The range of speed is shown by 13 recording charts. — A.P.-C.

L — Products of Cellulose & Paper

L-6 Plastic Masses. H. BLUCHER. **Chem. Ztg.**, xliv, 902-905, (1920); **Chem. Abs.**, xv, 1770, (June 10, 1921). A description of the classes of commercial matrials falling under the category of plastic masses. The author divides the important and most useful products into 6 classes: (1)glues, (2) papier mâché, (3) wood products, (4) cellulose products, (5) egg white and casein, (6) resins. — A.P.-C.

EXTENDING NEW BRUNSWICK MILLS

Construction work on the extension of the plant of the Nashwaak Pulp and Paper Company at St John, will be started during the winter judging from present indications. President Hugh Chisholm and General Manager Beedy are both anxious to start the building operations as more space is necessary at the St John plant. The mill is now taxed to its utmost capacity.

Before Christmas, the new main connecting the mill with the city water supply at Spruce Lake will have been completed. A start has been made on this work, and work has been preceding night and day. With the assurance of the added supply of water at the mill which was absolutely necessary if the extension was to be built, the company will go ahead with the new building. This structure will be about half the size of the present plant, and it is expected that the sulphite producing capacity of the mill will have been increased at least forty per cent before the summer arrives in 1923.

The spur track constructed from the line of the Canadian Pacific Railway to the mill, a distance of about three hundred yards has been a great advantage to the company, enabling the shipping of the pulp directly from the mill instead of utilizing teams to transport the pulp from the mill to the railroad

When the additions to the pulp mill at Bathurst are made by the Bathurst Company, instead of producing thirty thousand tons of sulphate pulp, per year, which is the production figure at present, will be manufacturing about fifty thousand tons yearly. The annual capacity of the new paper mill which will be completed before spring, will be about fifteen thousand tons per year. The president of this company is Angus McLean and the vice-president is A. E. McLean, both of Bathurst. A large number of well known American financiers are interested in the company.

Pulpwood operators are meeting with some difficulty in securing men to work in the woods. This is largely due to the presence of agents of Ontario and Quebec lumber companies who are gathering bands of men to work in the woods of the Upper Canadian provinces. Out of Gloucester County alone more than three thousand men have gone to work in in Quebec and Ontario woods for pulpwood operators and straight lumber operators.

The pulp mills of New Brunswick are all working full time. All are getting plenty of pulpwood, and all are disposing of their output satisfactorily. Since the revival of prosperity in pulp and paper, the stocks of pulpwood have been disappearing in the maritime provinces just as the lumber that has been stocked for years has vanished. Indications are that an abundance of pulpwood will be taken out of the maritime woods during the winter.

TECHNICAL PHOTOGRAPHERS' MEETING POSTPONED

On account of the proximity of the original date of meeting, the usual monthly gathering of the American Section of the Society of Chemical Industry, to be held at Rumford Hall in the Chemists' Club, 52 East 41st Street, New York, has been postponed from Friday December 1 to Friday December 15. The evening will be devoted to papers dealing with some of the chemical or physical aspects of photographic science, with special reference to the uses of photography and motion pictures in the industries. A paper dealing with the last-named aspect—the application of photography and motion pictures to industry—by Dr. A. B. Hitchins, Director of the Research Laboratory of the Ansco Company, Binghampton, N. Y., will open the proceedings and this will be followed by an address on "Some Chemical Aspects of Photographic Science", by Dr. F. F. Renwick, Director of the Redpath Laboratory of E. I. du Pont de Nemours & Co., Parlin, N. J. The third paper will be by Dr. Herbert E. Ives, Research Engineer of the Western Electric Company, New York, who is to take for his subject "Color Measurement as Utilized in Color Photography". This paper will be illustrated by lantern slides.

The members of the Technical Photographic and Microscopical Society are invited to attend this meeting, which has been planned for their benefit as well as for the members of the American Section of the Society of Chemical Industry, and it is hoped that the attendance will be a large and representative one.

CHILDREN IN DANGER

Some action should be taken at many of the mills throughout the South to stop the children from entering upon the sawmill grounds and yards. This is an old practice and it has resulted in many serious accidents and even deaths. Just recently our Safety Engineer was making a general inspection of a mill, and as he passed a wood chute, where wood is cut and elevated up into a high chute, he heard the cries of a child. Upon investigating he found a little boy about six years old hanging by his neck and one arm. It apperaed that this little fellow had climbed up into this chute to throw out enough wood to fill a sack that his parents had sent him to have filled, and in some way he slipped and fell through a broken board in the bottom of the chute, his head hanging between the two boards. No doubt but in a few more minutes the little fellow would have died had not assistance been given him by such a mere chance. This case should awake the fathers and mothers to the great danger they are sending their children into when they send them to a sawmill or any part of its operation for wood or for other purposes.

One of our mills has worked out a very good plan by which it has eliminated the presence of children entirely from the sawmill premises. The foreman held a meeting and appointed a committee in each department to see that children were kept away from the mill. If a child was caught on the grounds, they took his name, where its father worked, and then the child was taken off the yards. That evening this committee called upon the parents of the child and laid the case before them, and explained that if the child was not kept away from the mill the matter would be taken up with the general manager and father, which might result in his discharge. Up to this writing this plan has been a success and has the approval of every sensible man and woman in the town. —Common Sense.

Here is a lesson for all.

While no details are yet available, the industrial commissioner of Hull states that an English firm is at present negotiating for the purchase of property in Hull for the purpose of establishing a pulp mill and match factory in that city. Representatives of the firm in question are expected to arrive with in the next ten days. The Scott estate on the banks of the Ottawa River is spoken of as a possible site.

Giving evidence at Englehart, before the commission investigating the recent disastrous fire at Haileybury, Postmaster Heaslip, whose brother perished in the flames, scored the record of fire rangers in the past and said that these men had sped about the country in automobiles and could with difficulty be stopped to secure permits to burn. He had for some time advocated their removal.

British Trade News

(From Our London Correspondent)

London Nov. 6, 1922

Mr. Harry Becker, son of Sir Frederick Becker, is amongst the candidates for Parliament and all his good friends in London are looking forward to his success He is contesting Richmond Division (just outside London) in the interests of the Conservative Party. Mr. Harry Becker served in the war and in his place of business all the employees from the highest to the lowest are either ex-service men or ex-service women. Mr. G. R. Hall Caine of Becker and Co. is also a conservative candidate for East Dorset and is opposed by Capt. Guest as a Liberal. His brother, Mr. Derwent Hall Caine, strange to relate, is a Labor candidate for Reading.

Pulp and paper interests are closely associated with the Parliamentary election, in which there are now 9 different parties seeking supremacy.

Sir F. Becker's Crows

While the Canadian pulp was being shipped into Aberdeen, Sir Frederick Becker was enjoying a holiday in the vicinity, where some of the mills he is interested in are located. And while enjoying his well-earned rest the Aberdeen County Council became startled at the large number of crows (known in some parts as "rooks") hovering about his property, with the result that one of the mill foremen and a confrere were requisitioned for a shooting affray. Between them they killed close on 300 and Sir Fredeick in a humorous letter to the "Aberdeen Free Press" says that the remainder of the birds had no doubt "read your paper and also feared the 'lade' and fled." As a result the county council is feeling happier.

A Long Record

I mentioned two weeks ago that Mr. Frank Lloyd had 50 years service as a papermaker. In commemoration of the event his numerous friends have entertained him in London. That humorous and genial personality, Lord Riddel, presided and there was a good attendance of pulp and paper men, as Lloyd's paper mills are amongst the best in England today. Lord Riddell said that Mr. Lloyd was the "ideal of what a manufacturer and a business man should be." A finer compliment could not be paid to a papermaker after a service of 50 years. And while this statement comes from Lord Riddell, it must be revealed that the relationship existing between Mr. Lloyd and his workers is one of very strong affection. This is reflected in his reply to Lord Riddell—in reply to the toast of his health—when he stated that any success he had in life or business was due to the able co-operation of his confreres than to his own merits. The company present was representative of papermakers, newspaper producers, pulp sellers, pulp agents, and others.

I heard Sir Frederick Becker remark some years ago that if Mr. Frank Lloyd gave him an order for pulp it was never required in writing. Mr. Lloyd's word was his bond. What a splendid statement to come from the biggest importer of pulp in the United Kingdom!

The Pulp Market

There is a considerable amount of work and orders passing in the paper mills, which are pretty well covered so far as pulp is concerned for 1922. Future business is depending on the frivolities of prices. It is quite natural for sellers of pulp to secure all they can, but the moment brightness shines on the market prices respond. Buyers then stand aloof. And this is the process of events at present, millowners are only trying what they are compelled to do. There is, however, an optimistic tone amongst sellers who are firm in their demands when parting with spot lots, and the outlook is healthy.

Prices are quoted as follows:—Bleached sulphite £22; Easy bleaching £15; newsprint quality £14; Unbleached soda (No. 1) £13 1-2; soda kraft £12 1-2. Groundwood (pine) £4 12s. 6d for prompt delivery and dry £9. These are the quotations ranging in London today.

Scandinavians report that the demand on their side is growing steadily. They do not say what they have on hand at present. This would be interesting in view of the statements made three months ago.

Hydro-Electric Energy

Sir W. G. Armstrong Witworth and Co. Ltd., according to a statement made at the directors meeting by Sir Glynn H. West, has probably the best organised hydro-electric department in England. "When hydro-electric energy" he added, "was used for the purpose of making paper there was the additional advantage of supplying the papermaking machinery itself. It was partly because of tendering in these large schemes that the company decided some months ago to purchase the works of Charles Walmsley and Co., of Bury."

New Faculty

In Manchestor College of Technology a degree of Bachelor of Technical Science in Coloring Matters has been inaugurated. The college authorities announce that it will be possible now to obtain the degree of B. Sc. Tech. in the section of coloring matters and students are being encouraged to carry out some of the experiments in the college miniature plant in order that they may feel more at home when they take up positions subsequently in a mill. Canadians will please note!

The Paper Industry

Though there is a certain amount of activity in the British paper industry generally—there usually is before Christmas or it cannot be said to have reached the full stage of prosperity. But the outlook is hopeful and we are not standing still. If we were it would be a sign that mills were going back. Employment may always be taken as the true barometer of the state of trade and it is still a regretful feature of the industry to observe that the unemployed list is somewhat lengthy. But statistics show that exports and home consumption are on the increase. It will be a happy day when the announcement can again be made that mills are full up with orders. The great question at present taxing the minds of the mill owners is that of prices—the vagaries of the imports and raw materials values being an upsetting factor. However, putting all elements aside the outlook is hopeful and papermakers are optimistic in many ways.

SAVING OR SPENDING

When you read the histories of most of the manufacturing companies of the world, you will find that they were started by someone who knew how to work hard and was thrifty. All these men may have had at the start was a few hundred dollars, but if they hadn't had the few hundred dollars they never could have started business at all.

Even a man who goes into business with a pushcart must have some capital, else he cannot buy the cart nor his little stock of goods.

In the early days John D. Rockefeller kept a record of every cent he spent, and he never spent a cent unnecessarily.

Andrew Carnegie got his start by saving what he could out of his small wages and investing it wisely.

Men are starting fortunes today exactly the same way.

Are you saving or spending?—Tom Dreier, in Forbes Magazine (N. Y.)

UNITED STATES NOTES

Paper manufacturers and their cost men, particularly those of the New England district, were very much in evidence at the convention of the Cost Association in Holyoke the latter part of the week of November 6. Many men prominently identified with all branches of the paper industry were on hand. The papers, addresses and discussions proved so very interesting that some of the sessions extended far beyond the time limits originally set. Col. B. A. Franklin, vice-president of the Strathmore Paper Company; Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association; G. A. Ware assistant secretary of the News Print Service Bureau; J. A. Reilly, manager of the Cost and Inventory Department of the American Writting Paper Company; Seth L. Bush, retiring president of the Cost Association, and C. A. Jasperson, secretary of the Nekoosa-Edwards Paper Company, delivered notable addresses. Mr. Jasperson was elected president of the Cost Association of the Paper Industry for the ensuing year, succeeding Mr. Bush. G. A. Ware, who is the "man behind" in the cost accounting work of the News Print Service Bureau, told just how cost statistics are collected and distributed and also the benefits derived therefrom. Dr. Baker spoke of the increasing interest in cost accounting in the paper and pulp industry and related some of his observations in his recent trip among the mills in Sweden where every attention is given to production, costs, economy and the utilization of waste materials. Practically an entire afternoon's session was taken up with a discussion of the subject of Mr. Reilly's paper, which was "A Standard Basis for Comparative Cost Estimates." This idea of a universal system for cost figuring in pulp and paper mills brought out many differences of opinion as to its adaptability in the industry. However, the consensus of opinion seemed to be that the plan is a feasible one and that it may prove of benefit to the in entire industry.

Among industrial corporations announcing disbursements for the benefit of stockholders last week the Great Northern Paper Company topped all others by the declaration of a 200 per cent. dividend to be disbursed December 4. This company has started construction of a hydro-electric plant at the Anson end of the Madison-Anson bridge to develop 4,000 horsepower for its Madison paper mill. A large crew of men will be kept busy on this job for several months. A report that the Great Northern Company plans the erection of a new bag mill was denied by Superintendent Schenck of the Madison mill.

A recently formed Maine company for the general manufacture of paper specialties is the Paper Products, Inc. It is reported as having a capital stock of $10,000, none of which is paid in. Ralph T. Parker, of Rumford, is the president; Frederick A. Pullman, Mechanics Falls, is treasurer, and Leroy F. Limerick, also of Mechanics Falls, is secretary.

The usual fall improvement is noted in the paper box industry, but in addition to the seasonal demand there is a substantial general improvement evidenced by better orders and more of them from manufacturers in many lines. The year 1919 was a satisfactory one from the manufacturers' standpoint and by comparison the recent demand has been better. Advances in raw materials have caused a stiffening in prices. The outlook is favorable for continued good business, according to leading paper box makers.

The International Paper Company is advertising to holders of its first and refunding 5 per cent. sinking fund mortgage bonds that it will purchase by sealed bids all such bonds offered it for sale by November 22nd. The notice advertising the call for the bids states that the amount of funds now in the sinking fund provided under the First Mrogage of the International Paper Company dated January 1, 1917, is $100,638.38.

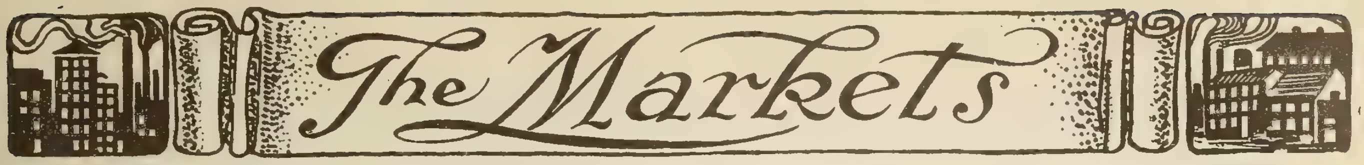
The benefit performance of the alleviation of suffering of Canadian forest fire victims, held in the ball room of the Ritz-Carlton Hotel in New York, last week, was well attended. Will Rogers of the "Ziegfield Follies," gave a humerous monologue; Miss Lonora Sparks of the Metropolitan Opera House sang, as did also Bela Kornyei, tenor of the Royal Opera at Budapest. Miss Evely MacNevin, contralto, sang a group of international selections, Reginald Barker's film, "Hearts Aflame," the thrilling forest fire picture, was shown for the first time. The ballroom was decorated to look like a forest. The proceeds of the benefit were telegraphed to the homeless in Northern Ontario.

A special meeting of stockholders of the Southern Paper Company has been called for November 27 to vote on an issue of $1,500,000 ten to twenty year mortgage bonds, which will be sold by a banking syndicate in the New York market.

In a summary of the situation in the paper industry at the present time, The Boston Chamber of Commerce publication "Current Affairs" states that the manufacture ond consumption of general paper production for the first three quarters of 1922 exceed the entire output of 1921. Southern pine, with pitch successfully extracted, says the review, may become a competitor of Maine spruce in the manufacture of news print pulp. The production of news print paper, it says, will be about thirteen per cent. greater this year than for 1921, while the production of book and tissue during the first months of the year is approximately larger than for the twelve months of the previous year.

Shirkers at the forest fires which swept southern New Jersey last spring have been fined $10 each. They had previously been forced to pay a penalty of $5 each after hearings before the State Board of Conservation and Development.

Charles E. Bush prominent in the book-paper trade and well known in the banking and business world, died November 16 at his resndence, New York City. Mr. Bush was born in Shoreham, Vt., in 1843. He was educated at the Norwich University and following the Civil War, in which he served with the "College Cavaliers". He started in the banking business and worked up to the top in that field. He entered the paper industry in 1893 when he became associated with the Ticonderoga Pulp & Paper Company Ticonderoga, N.Y. He was one of the men who taught the trade the folly of cut-throat competition and succeeded in placing the industry on a sound business basis.



The Markets

CANADIAN TRADE CONDITIONS

Montreal, November 21.—The local paper trade has slowed down during the week. Naturally these reactions will occur, but taking business as a whole the tendency is distinctly of an upward character. The printers are not busy; lithographci firms however have had quite a spurt owing to the legislation which calls for goods to be marked with the country of origin. Many American firms with Canadian factories formerly had their printing for containers done in the States. Under the Act this printing must bear the words "Printed in U. S. A." Apparently the heads of many concerns are of the opinion that the Canadian public will not appreciate the sending of printing work across the border, and fear that it will affect the sales of their products, even although they may be made in Canada. Hence lithographic work hitherto done in the States is now being executed in Canada. This is one advantage of legislation which compels manufacturers to inform the public of the origin of the goods.

From the general commercial point, the indications are favorable. The October trade returns show a balance of nearly 36 million dollars, the best for any October since 1913, when the excess of imports over exports was 54 million dollars. It is significant that October was the sixth month in succession to show a fovorable balance. Our export trade was quite good, and in this expansion forest products increased to the extent of over 4 million dollars. Whereas we imported in October forest products to the value of $3,381,121. We exported those products to the value of $20,873,667. This department of our trade is proving of increasing value, not only as a factor in enhancing the value of the Canadian dollar, but what is of probably more importance, rectifying our trade balance.

Newsprint is still in good market. The demand keeps up very well; many contracts for next year have been signed, there being a decided move to cover all requirements now that the price question has been settled. In another column we print a brief report of a speech by Mr. P. T. Dodge, president of the International Paper Company, which is of interest to the Canadian trade owing to the fact that the Company has a very large mill at Three Rivers. Mr. Dodge has come to the opinion that newsprint mills on the North American Continent need not fear competition from Europe; his visit there has convinced him that the European producers can sell all their paper at home. The experience of some American publishers with German paper in particular is not likely to improve the prospect of further sales for sometime. In most other lines of papers, the mills report satisfactory orders. Fine and book papers are being maintained in output; tissue and toilet paper mills are well booked up; while the board mills are very busy.

The pulp market is in good shape. Groundwood is getting scarce, and the price is naturally stimulated by this condition. As far as can be seen, the demand is likely to keep up, and there is expectation that quotations will go higher. Sulphite stands very much in its old position, the demand is not of a very brisk character; kraft however has moved up a little. The bleached sulphite market is still veery firm, with a good demand for all that can be produced.

Although pulpwood dealers state that the market is quiet, they are looking forward to better times. The American mills, like those in Canada, have eaten into their large supplies, and will probably have to buy more freely than of late. Owing to the heavy piles, the companies over the border did not feel inclined to go into the market, despite the low prices prevailing.

Toronto Markets

While some paper distributors in Toronto and district report business as somewhat spotty, the general condition of the paper trade, both from a manufacturers' and jobbers' standpoint is pronounced as healthy, with a generally satisfactory volume of business passing. Particularly is this so in respect to the paper mills, manufacturers of practically very line of paper reporting active operations and a good demand for practically every class and grade of paper. In the case of box and other boards the mills are extremely busy ad distributors and paper box factories are experiencing difficulty in getting shipments. The prosperity of the paper box industry in Toronto has become quite a feature of the paper trade and expansion was reflected this week in the announcement that one of the big paper box manufacturing firms had commenced building operations on a big new plant. Book paper mills and tissue and toilet plants are all running to capacity, while the market for blanks, bonds, writings etc. remains strong with prices on an upward trend. There is a general disposition to view the future of the paper trade in Ontario with the utmost optimism.

PULPWOOD.—A reasoable view of the wood situation is taken by G. W. Lankin, extensive dealers in pulpwood at Utterson, Ont. He is inclined to think that there should be a stronger demand for the product in the near future. The conditions and call for wood during the past two years have caused what he thinks is an over-production and this state of affairs has to be completely righted before anyone can say the market is in an absolutely healthy condition. Mr. Lankin adds, while he has no valid reason for saying that the market and prices are are strengthening, he is optimistic enough to feel that the future is bound to see more lively requisitions than the recent past. The price of paper is strengthening and this, in the opinion of Mr. Lankin, should stimulate pulpwood demand. Advice from dealers in the East in regard to the pulpwood situation are to the effect that the price of wood is likely to increase considerably within the next few months. This is partly due to to the fact that stocks are beginning to be depleted and the the production of sap-peeled pulpwood during the past season was not over 25 to 30 per cent. of normal. It is the opinion of one dealer that owing to the large demand for sawn lumber, there will be much pulpwood made during the coming winter months. The car shortage just now, however, is a serious matter for the dealers.

PULP.—Pulp of all grades is in good demand and the market generally is strong. Bleached sulphite is quoted from $100 to $105 and easy bleaching at $55.00. News grade sulphite is selling at $60 and groundwood pulp at $40, f.o.b. mill.

WRAPPING PAPERS.— Wrappings are in good demand and both manufacturers and jobbers are busy. Prices remain unchanged with an upward tendency. No. 1 kraft is selling at 8¼ cents, jobbers price: colored kraft, green, C/L, $8.35 per 100 lbs.: blue, mauve and red, C/L, 9½ cents per 100 lbs.: B Manila, 5¾ cents: No. 1 Manila 6¾: fibre, 6¾c.: Tag, 5½ cents.

BAGS.—The following prices for paper bags prevail: light manila, less 62½-7½-5 per cent.: heavy manila, less 60 per cent.: light kraft, less 60-7½ per cent.: heavy kraft, less 50-10 per cent.: white bond, less 17½-10 per cent.

BAG AND PAPER STOCKS.—The market is a little easier in paper stock, with new cotton cuttings holding firm and softening tendency in roofing rags. The all-round demand in all departments keeps up. Prices are unchanged from those of last week.

NEW YORK MARKETS

New York, November 18 — (Special Correspondence) — While the railroad tangle continues to hamper the normal movement of finished paper from mills to consuming centres and the shipments of raw materials to manufacturing plants, thereby placing the industry at more or less of a disadvantage, activity in the trade keeps up on a broad scale with demand for nearly all kinds of paper gradually assuming larger volume. The approaching holiday season is creative of a bigger demand for paper, as is invariably the case. Probably the consumption of paper and paper board reaches its maximum of the year along about December 1 when retail business increases and when newsprint is required in heavy tonnage by publishers for the printing of large issues, when wrapping and tissue papers are used in large quantity for packages of merchandise, when the consumption of fine paper increases because of the natural increase in business correspondence when trade is active, and when more box board is used than at any other time of the year for the making of paper boxes for the holiday trade. It is unfortunate that railroad conditions should become so unfavorable as they happen to be at just this time of the year as there is little doubt the industry would be moving along in a freer manner were transportation conditions better. However, paper men generally express satisfaction with the amount of business current in the various kinds of paper. True, there is somewhat of a shortage of certain kinds of paper in consuming centres, due to delays in receiving shipments from mills, but at the same time this is not curtailing business to a sufficient extent to have any ill effect on the market.

It is rather commonly conceded, even among consumers, that newsprint will continue in a strong market position during the forthcoming new year. Consumptions of print paper has been maintained on such a high level for an ample length of time to fully convince publishers and manufacturers that the present healthy condition of the market is no temporary affair, but the result of a return to normal of business conditions generally and the newspaper industry in particular. The fact that manufacturers have seen fit to fix prices of newsprint for the coming year at a reduction from the level prevailing during the latter half of this year seems sufficient proof that consumption will keep up at its present height, if not go higher. Everything points to a boom in advertising in 1923 which will by far exceed that of this year, and advertising means paper consumption. Many in the trade not only think that a new high record of newsprint consumption will be established next year, but that the tonnage of print paper used will be so far above this year's consumption — in itself a new record, from present prospects — as to scarcely bear comparison.

The feature of the paper situation at this time probably is that a great majority of manufacturers have big tonnage orders on their books which will absorb not only practically all of their output for the remainder of this year but also the bulk of their production well into 1923. Consumers in most cases have been quietly placing orders with mills recently and have not hesitated to fully cover their potential requirements for some months to come, feeling as they doubtless do that any further change in paper prices will be in an upward direction. This would seem to insure a firm and healthy market over the turn of the year and for a considerable part of the new year.

Book papers are moving in steadily increasing volume and prices exhibit much strength. With mills well sold up for sometime ahead, and with raw material showing an advancing trend rather than any signs of coming down in cost, manufacturers are necessarily viewing the matter of prices on their own product with pronounced firmness. Moreover it is generally recognized that improvement in the book paper division of the industry has not as yet reached the scope of other branches of the trade, so that a further increase in consumption of book paper is anticipated. Quotations on machine finished book are strongly maintained at around 7 cents a pound f.o.b. New York for average quality paper of this description, and super book is quoted at 7.25 cents upward and coated book at from 9 cents upward.

Fine papers are in consistently good demand and quotably firm. Raw material going into bond and ledger papers is at high cost levels and seems likely to move even higher, and probably the price of no other class of paper is guaged so closely in accordance to the cost of production as fine papers, with the obvious result bonds, linens and ledgers are exceedingly firm at present.

There is a good movement of wrappings and tissues and quotations rule firm. Box boards are sought in steady tonnage and no change has been recorded in quotations though the chief raw material entering into the manufacture of box board — waste paper — has declined appreciably in price during the past several weeks. Plain chip is still quoted at $60 a ton f.o.b. New York, and filled news board at $62.50 to $65 a ton.

GROUND WOOD. — There is a very strong undertone to ground wood quotations and the market for this commodity presents a bullish appearance. Unfavorable water conditions during the last few months have hampered grinders considerably and the production of print paper has been maintained on such a uation at the producing end is an exactly opposite one at the consuming end. Consumption of ground wood has been and still is on a heavy scale. Newsprint mills are using tremendous quantities and there is a large consumption among board plants and by other paper manufacturers. The last Federal Trade Commission figures showed that mill stocks of mechanical pulp had been reduced to a dangerous level, and in view of these circumstances it is easily explained why ground wood is steadily moving upward in price.

Domestic grinders are reported freely securing $37 to $38 per ton, and even higher, for prime spruce ground wood for prompt shipment, some consumers having paid close to $50 a ton delivered at their plants, it is stated. Imported ground wood is quoted at $40 to $41 a ton on the dock at New York with only a limited supply offered.

CHEMICAL PULP. — Proof is not lacking that demand for chemical pulps has subsided to some extent. This seems due, however, more to recent heavy importations, thereby causing consumers to hold off in buying in expectation that larger supplies will weaken prices, than to any decrease in the need of pulp. Paper manufacturers probably have covered their pressing requirements for a time and therefore can afford to wait out the market for a while, which they evidently are doing now that the season has arrived when large shipments are rushed out of Sweden to the American market before the Baltic freezes for the winter.

Quotations show little or no change sellers maintaining prices firmly. Kraft pulp of foreign origin is said to be practically unobtainable in sizeable lots at less than 3 cents per pound ex dock New York, and most domestic producers ask 3.25 cents for No. 1 kraft. Bleached sulphite is firmly quoted at 5 cents upward for No. 1 domestic at pulp mills, and between 4.50 and 4.75 cents for No. 1 foreign bleached.

RAGS. — One branch of the papermaking rag market is firm and fairly active whereas another branch is in an almost lifeless position with prices steadily declining. New cuttings of nearly all kinds are moving freely though probably in no exceptional volume, and prices display an upward tendency with dealers holding stocks with pronounced firmness. There is apparently enough of these rags available to cover consumers' wants though certain grades are more or less scarce, and buyers seemingly are anxious enough for supplies to pay the prices asked without perceptible hesitancy. No. 1 white shirt cuttings are quoted at around 11.50 cents a pound f.o.b. New York fancy shirt cuttings at 6.25 cents unbleached muslins at 10.50 cents, washables at 4.50 cents, white lawns at 10 cents and new light silesias at 7.25 cents. Old rags, on the other hand, continue to be largely neglected by buyers and prices have receded further. Roofing stock in particular is weak, and it is reported felt paper mills have bought No. 1 roofing at $1 a hundred pounds and No. 2 packing at 90 0cents f.o.b. New York. Old whites have

PAPER STOCK. — The downward trend of prices of old paper has not been checked and new low levels for the present movement have been established this week. Demand from mills is limited, most consumers buying merely in hand-to-mouth volume, which together with unfavorable shipping conditions holding up the usual movement of supplies out of New York, are creative of a weak price tone. No. 1 hard white shavings are down to 4.25 cents a pound f.o.b. New York, No. 1 soft white shavings to 3.50 cents, heavy No. 1 magazines to 2.25 cents, mixed books to 1.95 cents, ledger stock to 2.65 cents, folded newspapers to $1 a hundred pounds and No. 1 mixed paper to 85 cents a hundred pounds.

OLD ROPE AND BAGGING — Steadiness is noted in prices of old manila rope with current quotations ranging between 5.75 and 6 cents per pound at dealers' shipping points for domestic rope in No. 1 condition, and with foreign rope quoted at 5.50 to 5.75 cents.

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With The Woodsmen

THE IMPORTANCE TO THE PULP AND PAPER INDUSTRY OF CONSERVATIVE FOREST MANAGEMENT

By PERCY B. WILSON,
Vice-President, Spanish River Pulp & Paper Mills, Ltd.

The forest is the foundation upon which the pulp and paper industry is built. Without available raw material, the established plants, so important to the welfare of the Dominion, must cease to function. It is essential that the mills already existing shall be supplied with wood, sufficient to meet their annual requirements. It is inconceivable that responsible executives should exploit a National inheritance of this matter without taking thought for the future prosperity of the country, or the industry.

When the pulp and paper industries of the country were established, it was felt the supply of raw materials was inexhaustible. Development of the natural resources, employment of labor, liquidation of the National assets of wood and water-power were the important factors to be considered. The capacity of the mills established was predicated upon the power that might be developed, and the capital available for investment, rather than upon the volume of wood that a definite area would yield annually forever.

The demand for Canadian pulp and paper products increased when the supply of available pulpwood in the United States began to show signs of depletion and the expansion of the Canadian Pulp and Paper industry followed. The larger mills demanded more extensive woods operations; with expanding woods operations, the cost of pulpwood constantly increased. Attention was then centered upon wood supply. It was realized that the quantity of **available wood,** rather than the total amount of wood in the Dominion, was the index of continuity of supply.

The quantity of wood available for any established plant is limited to the wood on the area from which the mill may draw its supply within certain limits of cost. Without devising means for the perpetuation of this supply, it is evident that the quantity will be exhausted in a given period, depending upon the extent of the area cut over annually.

Since the pulp and paper industry represents an enormous investment in mills and the necessary accommodation for labor, the latter involving in many cases the building up of new towns in the wilderness which, once established, cannot be moved, it is essential that the forests which supply the mills shall be perpetuated. This can be accomplished by no means except conservative forest management. Conservative forest management includes protection of the forest against fire, utilization of all wood in the stand that it is economically possible to use, and the introduction of systems of cutting that will insure regeneration of the stand.

As present investment is necessary to insure future income, the pulp and paper industry must invest in conservative forest management at once, if it is to continue in prosperity. The strength of a plant must eventually be measured—not by the quantity of power developed, nor by the number and size of its producing machines, but by the proper relationship of the annual requirements of wood, and the annual yield of the forest, that it controls.

Forest exploitation promises closed plants, impoverished communities and the destruction of an important National asset.

Forest perpetuation through conservative forest management insures the continuity of the mills resulting in prosperous communities and permanent enjoyment of a rich inheritance by the Nation. — Canadian Forestry Magazine.

PLAN TO PLANT ANOTHER TREE

We plan our homes, our churches, schools,
Our boulevards, our parks and pools;
We plan our music, songs and books,
Our gardens and our ingle nooks;
We plan our children's hours so they
May have some sunshine every day;
We plan our lives and with a sigh
Cease planning only when we die.
But all through life how seldom we
Plan to plant another tree!

So plant a tree and watch it grow,
Through it some of your blood may flow;
It may become a safe retreat
That friends will seek with eager feet,
And 'neath its shade in cool content
Bless it—Your living monument;
A tree that sings a lullaby
To every pilgrim passing by,
And reaches out a friendly limb,
As if to shade and shelter him.
Selfish—selfish indeed is he
Who never plans to plant a tree.

A tree, a shady, sheltering tree,
Is like a living prayer to me,
A prayer that grace and comfort lends
To mortal man e'er it ascends
In thankfulness to bless the hand
That planting it, both worked and planned.
"A tree whose thirsty mouth is prest
Against the earth's sweet flowing breast;
A tree that looks at God all day,
And lifts its leafy hands to pray;
'Poems are made by fools like me,
But only God can make a tree.' "

—T. H. Kendall.

THE FUNCTION OF THE FOREST

The preservation and enlargement of the forests form the very basis of the whole conservation movement. Forests add to the fertility of the soil by returning to it more than they take out; they protect the headwaters of our streams and rivers, regulate the run-off, furnish cover for the wild life of the country, and last, but by no means least, promote industrial welfare through the production of lumber.

As a result of its special settlement efforts through the clearing of colonization lots the Province of Quebec disposed of 220,000 acres months 626 families of French-Canadian origin, consisting of 2,471 persons, returned to the home of their fathers from the New England states. Several thousand additional acres are already cleared for the same purpose and a system of inspection organized. According to a statement of the Provincial Minister of Colonization, Hon. J. S. Perrault, Quebec could easily accommodate 15,000,000 more people at brief notice.

EVEN THE GROUND CHANGES WHEN TREES GO

Editor,
"Canadian Pulp and Paper Magazine"
Sir:—

In reply to the latter of Mr. McCraney in the October 26th of "The Globe" asking why the settlers' fires of the present, cause such enormous damage as compared with the settlers' fires of the pioneer days of the country. I explained the matter as follows; it may interest your readers.

The cause of this is two-fold. In the first place, in the cold north country there is an excessive amount of duff or humus on the surface of the soil: this humus becomes very infammable when dry and when a fire is once started nothing short of a deluge will put it out; but, secondly, and more serious still, is the fact that our country is becoming drier each succeeding year, to the extent that the water table is being lowered in the earth at the average rate of three and one half feet every ten years, owing to the cutting and destruction of our forest growth which, if it is allowed to continue at its present rate, will very rapidly cause our country to become uninhabitable through extremes of climatic conditions causing prolonged drouths with vast forest fires, and occasional surplus of rain producing freshets, washouts and windstorms of increasing velocity. This devastation of our forests is the greatest menance facing Canada today.

Frank J. D. Barnjum

A LOOK IN THE FUTURE

The "Halifax Herald" thinks the provincial government has not been too hasty in starting a forest perpetuation policy. The cartoonist has put the smile on right face.

THE KINGDOM OF PULP WOOD

How many people understand the marvellous transition that has taken place, when they hold in their hands a sheet of paper — even their daily newspaper?

Just a little while ago, it was a living thing in the forest. It spread its wide branches until they met in a vast canopy of brilliant green. Monarchs, each, of the Far Places, each roll of paper was a tree embedded in the firm mossy soil and raising its proud head to summer sunshine and the long, bleak winters of the Land of the Flying Snow.

Then the sound of the axe was heard in the forest, and down the shadowy slopes echoed the lusty songs of men, as the chips began to fly. Straining horses dragged the prostrate logs over pine-needle paths, until river currents welcomed them to a still longer voyage of discovery.

Virgin forests are not desecrated when put to man's purpose. It is merely a marvellous transition. Every forest tree is a library of books or a fluttering white stream from the heart of the Fourth Estate. And there is something of inspiration in the sudden knowledge that, as one reads, he holds in his hand the breath, the romance, the profound majesty and beauty of the forests.

But there is need for a united effort to save these forests from a real peril, a real destruction. Every year entire tracts of timber-land are ravaged by fire. The hunter or trapper leaves a live coal burning as he passes on; a match is tossed carelessly into dry leaves by the amateur woodsman. There is tragedy in this, a crime against Nature, against Man himself. It is not what we use that causes paper shortage; it is what we waste, what we wantonly destroy. Let every man be a custodian of our forests, in the things that he says, in the things that he does. Fire in a forest knows no quarter.—"The Marathon Runner."

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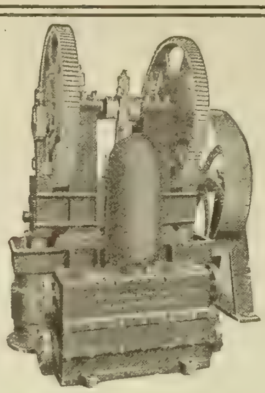

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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New York markets 1060

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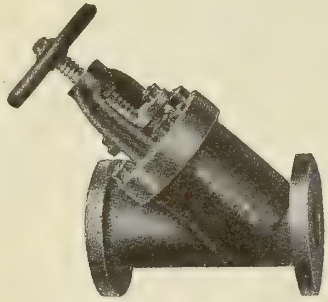

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-:- EDITORIAL -:-

BALANCED EDUCATIONAL WORK

There is considerable rivalry among Canada's pulp and paper mill towns in the establishment of the most complete facilities possible for the education of everybody in the place. Representatives of the Institute of Industrial and Domestic Arts, in beginning their canvas for students first met the feeling that correspondence courses were intended to take the place of organized schools and classes, of which some towns are justly proud. It did not take long to show that correspondence courses are a necessary and important part of a complete educational program. The mills are cooperating heartily in the enrolment of students, and some have done extensive work in regard to establishing night classes and improving the day school.

The editor has not yet seen all the mills in Canada, so no comparisons are to be made, but a few words about one or two places may prove helpful to others.

During the visit of the Technical Section to Iroquois Falls last summer, we visited the schoolhouse and found a building and equipment that would be a source of pride and satisfaction in a much larger community. Children may start at 4 or 5 years and continue well into high school subjects. Not only are the fundamental "three R's" taken care of, but there is also provision for the social and physical development of the children by properly directed sports and games on the play ground and in the gymnasium, and by other means. The standard of scholarship and the average attendance are models for the province. This is largely due to the appreciation of responsibility, as well as of opportunity for service, on the part of the school board. the selection of capable and enthusiastic teachers. and the general attitude of the community toward education.

With all this careful provision for the education of the youth. the welfare of the adults is by no means neglected. In fact, the attention given the one has, no doubt, been a big factor in the development of the other. Adult education is provided for by night classes and by correspondence courses. In addition there is a flourishing Science Club, where technical subjects pertaining especially to the local mill work are discussed.

The evening Industrial classes are held Tuesday and Thursday evenings in the Public School. from 7.30 to 9.30. The subjects studied and the enrolment in the classes are as follows: French 6, Chemistry 6, Mathematics 15, Mechanical Drawing 15, English 10, Sewing 17, Dress-making 8, a total of 77. A class in English is provided for foreigners who want to learn our language. Many of these will then go on to study other subjects.

No doubt these classes would be larger, but for the unavoidable interruption of work by the 3 tour system necessary in paper mill operation, and because of a natural disinclination of older men to go "back to school." These men, however, want to study, and feel a certain dignity in doing so at home. To assist those who wish to continue their education by this means, the Company appointed a committee of three, one of whom is a night superintendent, to cooperate with the Institute of Industrial and Domestic Arts, which conducts courses in Pulp and Paper Making, based on the Industry's Textbooks. The Institute's work is conducted under the supervision of a committee appointed by the Canadian Pulp and Paper Association. The chairman of this local committee collects and forwards installments on the tuition for the courses and arranges for a tutorial class in the mill classroom, where a man with a question to ask about his work may drop in for consultation. The number of students already enrolled is proof that the opportunity to study the principles and practice of pulp and paper manufacture is appreciated.

Evening classes are being conducted in several other places where mills are located, and others are organizing, so that nearly all the big mills in Ontario and Quebec are provided with day schools and night classes, and, as rapidly as possible, the Institute is organizing local work with the cooperation of the mills, so that students in the correspondence courses will have every facility for successful study.

It will not be long before hundreds of Canadians will be thanking the Pulp and Paper Industry for an excellent practical education.

GETTING MEN AND IDEAS TOGETHER

There are many bright ideas for revolutionizing industry and machinery that are not worth shucks, but there are a great many very valuable ideas and inventions that are not available for the benefit of mankind because the proper contact has not been made between the inventor and a source of financial support. There is to be held at the Grand Central Palace, New

York, from February 17th to 2nd, 1923, a Universal Exposition of Inventions and Patents. The opening day is to be called International Day and the following days are named in honor of great inventors, namely Marconi, Steinmetz, Edison, Bell and Westinghouse. One has only to pause and consider how much the world would lack in not having Radio, Electric Motors, the Phonograph, the Telephone or the Railway Air Brake, to appreciate the value of contact between an idea and the finance necessary to put this idea in such shape that the public may have the benefit of it.

Putting an invention in such shape that the public may use it, not only means encouragement and rewards to the inventor, but it means business all along the line, for the manufacturer, the merchant, the capitalist, transportation organization and the laboring man.

The Exposition authorities are to offer cash prizes, medals and certificates of merit to inventors whose devices may be adjudged to combine novelty and utility with commercial practicability. It certainly seems to us that this is a very fine idea and one worthy of wide support, to bring together, not only to the public notice, but also to bring in contact with financial assistance, those servants of the public who have ideas to sell.

HUMAN EFFICIENCY

A very interesting and instructive presidential address was delievered last month by Professor E. P. Cathcart to the Physiology Section of the British Association.

The address to which we are referring was entitled "The Efficiency of Man and the Factors which Influence It"; and the speaker gave it as his opinion that there were at least four factors which played predominant parts in the attainment of maximum efficiency. These four factors he pronounced to be the following: First, the rate of the performance of work; secondly, the amount of rest offered to, or taken by, the subject; thirdly, the rhythm with which the work is performed; and, fourthly, the work habits developed by the worker. These factors are all intimately related, and, in fact, usually merge into one another.

Of the four factors mentioned, it is certain that most attention is usually devoted to the rate of speed at which the work is carried out. Indeed, it is probable that, in this connection, the old adage, "Time is money," has, like a good many other half-truths, been overworked and has been responsible for much false physiology. In Professor Cathcart's opinion, at any rate, the correct stress on the relation of speed to general industrial efficiency is that which is thus laid: "No movement can be compared with another and said to be better than it merely on account of its speed; it should only be compared in respect to ease and final result." If this is right—and we are disposed to think it is—then those who believe that maximum efficiency can be best obtained by mere speeding-up are thinking along wrong lines.

One of the chief sources of general inefficiency among workers is a wrong diet. The inadequately or wrongly fed worker is incapable of the best work. Then the worker is affected by the monotony or fatigue of his work. There is, possibly, a close relationship between monotony and fatigue, but the two are not identical. As regards the former, the temperament of the individual worker plays an enormous part in determining whether a particular operation in a plant is a monotonous one. So far as fatigue is concerned, this is often closely related to several other factors, such as the lighting, heat and ventilation of the plant. For example, in very many plants it will be found that the late afternoon is the most unproductive period of the entire day, and fatigue is the chief reason for this unproductivity, with lack of pure, fresh air as the primary cause of the fatigue. With this question of fatigue, too, the mode of life led by the worker outside his definite hours of labor, his housing and so forth have a good deal to do.

In short, individual industrial efficiency cannot be casually referred to any single factor, for it is dependent upon a multiplicity of factors, most of them, doubtless, more or less correlated. It cannot be said of real industrial efficiency that it means just the mere capacity of the individual to perform so many kilogrammetres of work in a given time with the smallest expenditure of energy. For all who have given thought to the matter realize that it means a good deal more than that. Indeed, as Professor Cathcart puts it, "the quest of efficiency is one of the most intricate problems, in its infinite ramifications of the physiological and sociological structure, which have ever called for solution, and it involves the whole welfare of our race and nation."

As such, it calls for the closest and most intimate cooperation between the scientific investigator, the employer and the employee. In such cooperation, it is obvious that work along the lines of welfare endeavor has an important role to play. The spirit of welfare work is that of goodwill, such as is only possible where employers and employees can get together in good comradeship. Negative goodwill, is of little worth in such a connection. The vital thing is active cooperation. In Canada, we have the plants, the skilled workers and the able direction. But still too largely the spirit of active cooperation is lacking. It can only be satisfactorily secured when mutual distrust of motives, capacities and methods is stilled. We need a larger statesmanship and a truer vision among all those concerned, in whatever capacity, with industrial relationships, not only in their wider national aspects, but in individual firms. And work along the lines of welfare endeavor affords an example as to the method by which not only class antagonisms, but even national antagonisms, may some day be allayed.—A. R. R. J

NOT YET

Old man to Willie on a hot day—"Well, son, how is your grandfather standing the heat?"

Willie—"We ain't heard. He's only dead a week.

The Use of China Clay in Tinted Paper*

With all the world clamouring for paper making materials, it is only natural that more and more attention is being directed to the greater use of china clay, especially in the production of "news" paper, the consumption of which is enormous. Not only is the quantity of china clay employed in the manufacture of paper being increased because it is a cheapening agent in the cost of production compared with other materials used, but because of its intrinsic value as an easily adaptable material to almost every phase of paper making. From the common tinted papers to the highly finished and heavily faced art papers, the harmless action of china clay upon other ingredients is being found in practice to be such a valuable characteristic, that its employment bids fair to become increasingly essential for use in paper making. Its remarkable affinity for printers ink makes its use in "news" a feature of great value, coupled with its adhesive properties which causes it to stick with such tenacity to the fiber of the pulp.

The part china clay plays in the art of colouring paper is but another instance of its versatility in paper manufacture. In the "Text Book on Pulp and Paper Manufacture," being prepared under the direction of a joint educational committee representing the industry in Canada and the United States, frequent references are made by Mr. Otto Kress to china clay in its relation to aniline dyes in his contribution on the colouring of paper.

The Importance of Aniline Dyes

Before the introduction of aniline colors, paper was colored by means of pigments, dyes derived from either vegetable or animal sources, or color lakes. These lakes are made from either vegetable or animal dyes, to increase their tinctorial power, resistance to fading, etc. Many of these products were very permanent; but in view of the cheapness, ease of application, and uniformity in strength and shade, the aniline dyes, in so far as American practice is concerned, have with a few minor exceptions replaced both the pigments and natural dyestuffs. During the period of the late war, when a decided shortage of dyestuffs occurred, the paper mills largely reverted to the use of pigments and natural vegetable dyestuffs. The latter appeared on the market in the form of concentrated powders, pastes or lakes, made from osage orange, fustic, quercitron, hypernic, black oak, logwood, etc.

By a lake, is understood the coloring matter produced by precipitating a dye as an insoluble or practically insoluble compound upon an inert base, by means of acids, salts, or alkalies, or by means of the base itself. It is of interest to know that such material as aluminum hydrate, certain clays and green earth have the property of fixing small amounts of basic dyes upon themselves with the formation of lakes.

The important lakes of the basic dyes are compounds of the dye with tannic acid, tartar emetic, etc., formed in the presence of certain bases such as blanc fixe, barytes, whiting, china clay, green earth or aluminum hydrate.

Lakes of acid dyes are generally compounds of barium, calcium, aluminum, lead, iron or chromium, precipitated by means of the metallic salts, in the presence of the base or simultaneously with the formation of the base. Certain insoluble dyes, such as paranitraniline red, when produced on a base, are sometimes called lakes, but do not properly come under this definition.

Color lakes made from the vegetable dyestuffs, while important during the recent aniline dye shortage, will not be used in the future, to any extent, as American dyes are now being made in sufficient quantity and quality to satisfy all the needs of the paper industry.

The Use of Pigments

Pigments used in the coloring of paper pulp are of three types; insoluble mineral products, ground either in their natural state, such as ochre, raw umber, etc., or heat treated products, such as burnt turkey umber, etc.; colored insoluble inorganic compounds, such as Prussian blue, lead chromate, ultramarine, etc., or as insoluble organic compounds which are true aniline dyestuffs such as the vat dyes, which find application in the paper industry by being used as true pigments. These latter dyes will be included under the aniline dyes. On the border line between insoluble pigments and soluble aniline dyestuffs may be considered such products as soluble Prussian blue.

Why Paper Clay Should Be Gritless

In general, the coloring of paper stock in the beater by means of pigments depends on the mechanical entanglement of the insoluble pigment with the paper stock, there being no direct coloring or absorption of the colored pigment. The depth of the coloration of the paper, therefore, depends largely on the degree of sizing, the character of the stock (slow stock retaining larger amounts of the pigment than a free stock), character of the pigment, and also on the type and operation of the paper machine. Strong suction, either at the suction box or by the suction roll, tends to produce a two-sided effect on the paper, the top side of the paper being more strongly tinted or colored than the wire side. With strong suction or with a free stock, there is a tendency to lose a higher percentage of pigment in the back water, the pigment behaving exactly like clay or other loading material. Pigments, if used in large amounts, have a decided weakening action on the paper, acting in this way like ordinary loading materials. Pigments such as the ochres and the other earth colors should be tested for grit, as when used in large amounts, for deep shades, this grit may cause pinholes in the paper, causing frequent breaking of the paper while it is going over the machine; the grit has also a tendency to wear the felts and wires, and to scratch the calender rolls like a gritty clay when used for loading purposes.

Yellow ochres and siennas are natural silicates, the ochres containing hydrated oxide of iron, the siennas containing manganese oxide. The color varies from yellow to brown, the tinctorial power being very low, while these pigments are of permanent shade, not being affected by size, alum and alkalinity of the water, their action, in so far as the coloring of paper is concerned, is very similar to china clay. If used in large amounts, in order to produce a deep shade, these products have a decided weakening action on the strength of the finished sheet. Freedom from grit is also important.

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* China Clay Trade Review.

Various Prussian blues, both as pigments and in a soluble form, are used quite extensively for the tinting and coloring of paper, these blues being fast to light, but very sensitive to alkali. This is especially important in oatmeal wall paper and hanging papers colored with these products as with freshly plastered walls, or with alkaline glues, the color of the paper may be affected.

Ultramarine and Alum

Ultramarine, a double silicate of sodium and aluminum containing some sodium sulphide, is used quite extensively for the tinting of higher grades of white paper. Ultramarine has the decided drawback of being sensitive to acids and alum, the color being affected by these agents. The so-called alum resisting ultramarines are superior in this respect to the ordinary ultramarines.

A pigment green made by coloring stock in the beater with chrome yellow and Prussian blue is occasionally used. The green obtained by this mixture is not nearly as satisfactory as that which may be obtained by aniline colors. The tinctorial power of the mixture is low. In so far as the American paper industry is concerned at the present time, the aniline dyes are used almost exclusively for the tinting and dyeing of pulp and paper.

The aniline dyes have the following decided advantages over pigments and natural dyestuffs: 1, great tinctorial power; 2, ease of application and uniformity of the product, both in shade and strength, so that the dyeing of the pulp or paper is very much simplified; 3, the dyestuffs now available cover every range of color and shade, and can be chosen according to cost, tinctorial power, resistance to various factors, such as fading, alkali, alum, etc.; 4, the aniline dyes do not decrease the strength of the dyed sheet, as do the pigments.

Aniline dyes, mainly of German manufacture, that satisfied every need of the paper industry, were on the market before the war, but owing to unfortunate difficulties, the paper industry reverted to a considerable extent to the use of pigments and vegetable dyes or lakes prepared from them. Now, however, the American dyestuff industry has so developed that it is possible to secure practically all of the colors available before the war.

Where China Clay Comes In

Basic dyes, such as methyl violet and the blues, safranine, etc., have a tendency to mottle or dye unbleached sulphite more deeply than groundwood, as they have a greater affinity for chemical than for mechanical pulp. In extreme cases, this can be overcome by adding the solution of the basic dye in a very diluted condition to the beater furnished with the groundwood stock, and then thickening the furnish by adding the sulphite stock in lap form. In general, a tendency to mottle can be overcome by adding the dye in a very diluted condition. Another means of preventing mottling is to precipitate basic dyes on china clay which is used for tinting purposes. Many of the basic dyes used for tinting purposes have the property of coloring china clay, forming a clay dyestuff compound which readily dissociates in the presence of the large volume of water in the beater. By gradually and uniformly coloring the sulphite stock in this way, mottling can be prevented in a groundwood-sulphite furnish. A similar difficulty of mottling by basic dyes is sometimes experienced in papers made on a furnish of unbleached and bleached sulphite pulps.

General Notes on Coloring

Paper may be colored by dyeing the pulp in the beating or by coloring the paper in web form on the calender. As over 95 percent of all paper is colored by dyeing in the beater, calender coloring will be considered as of minor importance and at a later date.

In the operation of manufacturing colored coated paper, the color is added directly to the mixture of casein, china clay, etc., and applied on the coating machine. Considerable coloring is done by means of color tubs or vats in order to economize in dye-stuff for the production of deep shades. The stock is first partly colored and sized in the beater, and is then put over the paper machine in the usual way, but only partially dried on the first section of the dryers. The paper is then passed through a color tub and squeeze rolls and finally dried over the balance of the dryers. In this way a deep shade covering just the surface of the paper can be more economically produced than would be the case if the stock was entirely colored in the beater.

How Color, Size and Alum Are Added

The paper industry does not make use of mordants to combine with the dye so to make a color lake to increase the fastness of the dyeing, as do the textile, leather and other dye-consuming industries. There are, of course, certain exceptions, such as the rosine, phloxines, rose bengals, and erythrosines, which are usually after-treated in the beater with lead acetate in order to improve their brightness and fastness. Similarly, certain direct blues are decidedly improved, in so far as fastness to light is concerned, by the addition of copper sulphate. There is no question that after-treatment of the dyed stock with the proper mordant would in many cases improve the fastness of the dyeing. This would be especially true if the basic dyes were after-treated in the beater with tannic acid or some cheap extract containing tannin.

Considerable controversy exists as to the proper order of the addition of color, size and alum to the beater. The author believes that, with very few exceptions, the dyes should be added first and mixed with the pulp, after which the size and then the alum should be added. This appears to be particularly true for the substantive colors, as the precipitated size appears to coat the fibres, making it difficult for the dye to color them. Comparatively little difference, however, would be made by varying the order of addition with any of the different classes of dyestuffs, except the basic dyes. With basic dyes, in order to prevent any possible precipitation of the free color base, the author considers it advisable to add the dye after the stock is sized and alumed sufficiently to avoid any danger of alkalinity in the beater. The various dye manufacturers can give the consumer the best directions in regard to the order of addition of color, size and alum to the beater, and advantages should be taken of their specialized knowledge and experience.

Habit is a cable; we add a thread to it each day and at last we cannot break it.

Pulp Possibilities on the Pacific Coast

By A. W. SCHORGER, C. F. Burgess Laboratories,
Madison, Wis.

Horace Greeley gave to the youth of his generation the now hoary advice— "Go west!" Present indications are that the pulp and paper industry will follow this advice, if not from choice, at least from force of circumstances. An orderly progression westward would readily become a stampede were it not for certain very important factors, the chief of which are distance from consuming markets and immense plant investment in the east.

The United States is faced with the peculiar situation of having practically all its pulp mills in the East, where there is but a small supply of pulpwood, while the West with its great forest resources has but few mills; in fact, out of 250 plants consuming pulpwood in this country only 11 of them are located on the west coast. What has been the result? Simply this: In 1920 as a result of our deficiency in pulpwood, pulp and paper, we paid a tribute to foreign countries of $191,000,000. Most of this money went to Canada.

Urgent Need is Newsprint Pulp

The urgent need is pulp for newsprint. The newspapers combine a Gargantuan appetite with a critical taste. They require the finest pulp woods, spruce, fir and hemlock. A more comprehensive view of the situation can be obtained by glancing at a few figures. In 1920 our paper production was the following:

	Tons
Paper board	2,313,000
News print	1,512,000
Book	1,104,000
Wrapping	832,000
Fine	389,000
Other grades	892,000
All grades	7,042,000

Against the above figures must be weighed the following importations:

	Value
Pulpwood, 1,241,444 cords	$16,902,939
Wood pulp, 906,297 tons	89,418,185
News print paper, 729,869 tons	68,600,950

The United States in 1920 used about 5,000,000 cords of domestic wood. Converting the importations into pulpwood gives an additional 3,500,000 cords. We now reach the very disturbing conclusion that our forests are no longer supplying more than 60 per cent of our annual consumption of pulpwood.

Eastern Pulpwoods Diminishing

Of the pulp manufactured about 50 per cent. consists of sulphite and 25 per cent. of mechanical. Practically the only species used for this pulp were spruce, balsam fir and hemlock. The supply of domestic spruce in the East has decreased to the point where it furnishes less than half of our requirements, and continues to dwindle annually. Only sporadic attempts have been made at reforestration, and even though planting were pushed vigorously it would take many years for the annual increase to keep pace with the consumption. The use of the southern pines offers little hope since they are suitable neither for the manufacture of ground wood or sulphite pulp. For newsprint neither the ground wood or sulphite are bleached, while conifers cooked by either the sulphite or soda processes give dark pulps that bleach with difficulty.

The pulp and paper industry therefore faces the situation of buying more and more foreign pulpwood and pulp or going west where the wood is obtainable. The present drain on the Canadian forests cannot last indefinitely. The stands at present being cut are virgin timber, some of which has required a century to reach merchantable size. The severity of the climate while leading to pulpwood of the highest quality, is not conducive to rapid growth. On the other hand the West Coast not only contains species suitable for the highest quality of pulp, but its mild climate and abundant rainfall offer extraordinary conditions for rapid reproduction.

Cost of Puldwood

The cost of pulpwood has quadrupled during the past 20 years, reaching in 1920 the average figure of $19.00 per cord. In 1918 the United States as a whole paid $13.93; in New York it cost $17.89, in Canada $12.00, and on the West Coast $8.90. The West accordingly had an advantage at that time over New York of $18.00 per ton of sulphite when we consider that it takes two cords of wood to make a ton of pulp. The pulpwood prices for 1916 running about $5.60 for the West Coast and $11.00 for New York State are more in line with those prevailing at the present day, and show a difference in pulpwood cost per ton of pulp of $9.00 This is an advantage more apparent than real with the present economic status that allows a ton of pulp to be laid down on the Atlantic seaboard from Europe as cheaply as it can be transported across the state of New York.

The interesting and valuable data obtained by the Forest Service on the use of various woods in place of eastern spruce, leads inevitably to the conclusion that the best substitutes are to be found on the west coast. The chief requirements for mechanical pulp are appropriate woods and cheap power, both of which are obtainable in the West. The western species particularly adapted to the manufacture of mechanical and chemical pulps are given below.

Mechanical Pulp

Species and Color	Yield lbs.
Alpine fir (Abies lasiocarpa)—White	2,400
White fir (Abies concolor)—White	2,060
White fir (Abies concolor)—White	2,000
Amabilis fir (Abies amabilis)—White	1,870
Lowland fir (Abies grandis)—White	1,950
Engelmann spruce (Picea engelmanni)—White	2,100
Lodgepole pine (Pinus murryana)—White	2,140
Sitka spruce (Picea sitchensis)—Gray	2,100
Western hemlock (Tsuga heterophylla)—Gray	2,160
Red fir (Abies magnifica)—Pinkish	1,975
Noble fir (Abies nobilis)—Pinkish	1,920
Western yellow pine (Pinus ponderosa)—Yellowish	2,060
Western larch (Larix occidentalis)—Brown	2,100

The species are arranged approximately according to color in comparison with eastern white to strength and other qualities. Alpine fir bears the distinction of being lighter in color than spruce, the standard pulpwood, and not according white spruce while Englemann spruce is fully equal to the latter with respect to color.

The mechanical pulp from white fir is of very good quality when young trees are used ; from the standpoint of production, power consumption, strength and color, the advantages are entirely in favor of the young trees over large old trees. The heartwood of old trees is always darker and more brittle than the wood of younger growth. All the firs grind easily and all give pulps suitable newsprint, though that from amabilis fir and lowland fir are the better.

Engelmann spruce gives a pulp of excellent strength and color. Trees from Montana owing to their greater density give almost 200 pounds more pulp than those from Colorado. Sitka spruce has the longest fibres of any of the American spruces, averaging 5 to 6 millimeters in length; in fact some fibers will attain a length of 8 millimeters. This species forms large pure stands especially in Alaska and promises to be a pulpwood of the first importance. While the pulp has a grayish tone and is not equal to white spruce, it nevertheless can be considered of high quality.

Hemlock Pulp Described

The pulp from hemlock resembles that from Sitka spruce. The wood can be ground at higher pressures and a sharper stone than eastern hemlock. The pulp compares favorably with that from white spruce and is greatly superior to the product obtained from the eastern hemlock.

Gives Creamy Soft Pulp

Western yellow pine gives a creamy, soft pulp that is long fibered though fairly coarse. It can be ground under a variety of conditions, and appreciabble amounts of resin do not give trouble. The quality of the wood varies greatly throughout its range. Some of the wood is so light in color and free from resin as to be sold as white pine. Some trees are very resinous and others so full of knots as to be unsuitable for pulp. Lodgepole pine yields a pulp that compares favorably with white spruce. This species also shows considerable geographical variation. The trees from the coastal plains have darker, more resinous woods than those from the Rocky Mountains and do not yield as good a pulp. Small trees growing at high altitudes give better pulp than the large trees from low altitudes. This generalization holds for most pulpwoods.

Larch Makes Poorest Pulp

Western larch among all the species mentioned gives the poorest mechanical pulp. The pulp obtained with a sharp stone contains so much fine material that it does not work well on the paper machine; consequently it is necessary to be content with a coarse shivey pulp, the brown color of which is an additional objection for newsprint. On the other hand when the wood is steamed before grinding, a good pulp is obtained suitable for the cheapest grades of wrapping paper. On the basis of its weight per cubic foot western larch gives about 200 pounds less mechanical pulp than it should. This decrease is due to a water soluble galactan, that will be discussed further below.

Sulphate Pulps

The sulphate process has the broadest application of any of the pulping processes and there are few if any conifers to which it cannot be applied. The pulp obtained by this process is unusually strong but has the disadvantage of being dark in color and frequently it is impossible to bleach certain species to a satisfactory white.

Species	Yield of Pulp lbs.	Character
Redwood	950	Long, fine, tender fibers
Incense cedar	950	Dark, strong, hard
Western yellow pine	1,100	Excellent, strong, hard
Sugar pine	1,150	Light, strong fibers
Lodgepole pine	1,120	Strong, light
Western larch	1,290	Dark, strong
Western hemlock . .	1,100	Very good, strong dark
Duoglas fir	1,170	Good, dark
White fir	1,100	Very good, dark
Red fir	1,150	Very good, dark
Noble fir	1,100	Very good, dark
Grand fir	1,140	Very good, light
Amabilis fir	1,100	Excellent
Alpine fir	1,050	Excellent
Sitka spruce	1,150	Good
Blue spruce	1,150	Good
Engelmann spruce .	1,000	Good, light color

Too Valuable for Sulphite and Groundwood

Most of the above woods are too valuable for mechanical and sulphite pulps, to be converted into sulphate pulp for which the market is much more limited. At the present time most of the sulphate pulp is used in wrapping paper and container board.

Sulphite Pulps

The western coast contains a far greater number of species suitable for sulphite pulp than does the East, as will be seen from the following table:

Species	Yield lbs.	Character of Fiber
Blue spruce	1,050	Superior strength and color
Engelmann spruce	990	Superior strength and color
Sitka spruce	1,080	Superior strength and color
Amabilis fir	1,060	Fair strength, good color
Alpine fir	1,010	Good strength, fine color
Grand fir	980	Fair strength, fine color
Noble fir	1,010	Poor strength, fine color
Red fir	1,080	Good strength and color
White fir	950	Good strength and color
Douglas fir	850	Moderate strength, poor col.
Western hemlock .	1,050	Good strength and color
Western larch . .	1,200	Poor in strength and color
Lodgepole pine . .	1,080	Excellent strength and color
Western yellow pine	1,130	Inferior in strength and col.
Sugar pine	1,010	Poor strength, fair color
Incense cedar	830	Strong but poor color
Redwood	920	Moderate strength, dark col.

The spruces listed above are easily reduced to pulp by the sulphite process though Engelmann spruce pulps least easily of the three; however, all the pulps bleach easily.

All the true firs pulp easily; they bleach readily, also, with the possible exception of red fir. Douglas fir offers a decided exception. The generic name of this species (Pseudotsuga), translated, is false hemlock. The tree is neither a fir nor a hemlock, the wood in most respects resembling pine. This point should be borne in mind in considering this species for pulp. The true firs rank with the spruces in their suitability for mechanical and chemical pulp, but Douglas fir refuses to be so amenable to pulping discipline. It is hard to pulp by the sulphite process, difficult to bleach, and the yield is only about 80 per cent of that of spruce. The best that can be said for it is that it gives a good grade of kraft.

Western hemlock pulps and bleaches easily while western larch is just the opposite. It is hard to pulp giving a product difficult to bleach and containing much short fiber. Extraction of the chips with hot water to remove the tannins and galactan with subsequent cooking with sulphite liquor on a commercial scale resulted in a distinct improvement in the color of the pulp, but it was still entirely too dark for newsprint.

Sugar pine, "Rocky Mountain" lodgepole, and western yellow pine pulp quite easily, but the fibers are rather difficult to bleach. Some lowland lodgepole from the coast proved to be difficult to pulp and shivey. The pulp from western yellow pine as a rule is inclined to be shivey.

Incense cedar and redwood cook easily but give low yields, and the pulp in both cases is difficult to bleach.

Utilization of Wood Waste

In 1920 pulp mills used but 170,000 cords of slabs and other mill waste. This of course represents but a fraction of the wood waste produced. The nature of the wood waste itself is one of the factors preventing more extensive utilization since it consists largely of yellow pine and Douglas fir that cannot be pulped to advantage except by the suphate process. The wood used should be comparatively free from decay, bark and knots, since the latter materially affect the yield and quality of the pulp, and the consumption of chemicals. Douglas fir comprises about 75 per cent of the total lumber sawed in Washington and Oregon. This species along with western yellow pine and sugar pine, representing so large a proportion of the mill waste are best suited for kraft, though there are good possibilities of converting the latter species into easy bleaching sulphate for book paper.

While the groundwood experiments made by the Forest Service were in progress, it was noticed that western larch gave about 200 pounds less pulp than should be expected from the weight of the wood per cubic foot. The pulp carried away in the grinding water was insufficient to account for this difference and the only reasonable conclusion to be reached was that the wood contained a considerable amount of substance soluble in water. The writer in investigating this point made the interesting discovery that the wood contains from 10 to 20 per cent of water-soluble galactan. Most of the conifers were subsequently found to contain small amounts of this substance, but western larch is unique in its high galactan content, and so far as known there is no other tree in the world that compares with it in this respect.

The galactan when separated in the pure state is a white powder resembling starch. It is related to milk sugar to this extent that on hydrolysis the galactan gives the sugar galactose, while milk sugar gives equal parts of glucose and galactose. When the water extract of the wood is oxidized with nitric acid, a white acid called mucic acid is obtained. Mucic acid has a variety of uses and is particularly adapted for use in baking powders in place of cream of tartar.

There is a large waste in logging western larch at the present time. The butt logs are so heavy and full of shakes that they are usually left in the woods; these butts, however, represent the parts of the tree richest in galactan. The C. F. Burgess Laboratories have investigated very fully the utilization of this wood. The wood ground after steaming gives a good grade of pulp and by recirculation of the grinding water (H. F. Weiss, U. S. Patent No. 1,339,489) the galactan can be recovered cheaply in a more concentrated form and converted into chemical products. The wood gives a quality of kraft pulp by the sulphate process and before cooking the chips should be extracted with water on the counter current principle. This preliminary treatment not only renders possible the recovery of a valuable by-product but materially reduces the consumption of chemicals since in the soda and sulphate processes the carbohydrates are converted into saccharic acids.

By-Products of Lumbering

Lumbermen to render their operations profitable must pay more and more attention to by-products. It has been said that the packers boast of using everything from the pig except its squeal, but when it comes to a tree even the bark is used. This unfortunately is true to only a very limited extent. Most of the western trees are characterized by very thick barks. The western species of larch, hemlock and yellow pine contain tannins of great value for the leather industry and promise to be of great future importance. Some barks when passed through a refining engine yield mechanical fibers valuable for boxboard, felts, and building papers. The bark of the redwood can be combed out mechanically in the dry condition to long, moderately strong fibers suitable for roofing papers and insulating felts.

Utilization of Redwood Waste

The utilization of redwood waste offers an interesting problem. The wood is soluble to the extent of about 25 per cent in water, the water extract being rich in tannin; the dark tannage obtained with the latter is a serious drawback to its use. Partly owing to the high water soluble content of the wood, the yield of chemical pulp is about 15 per cent below normal, which materially reduces the digester output. The pulp fibers are unusually long, but of only moderate strength; their color is decidedly dark and from 30 to 40 per cent of bleach is required. It was thought that a preliminary extraction of the wood with water before cooking would produce a pulp materially lighter in color; this did out prove to be the case however even when the extraction was made at 60 pounds pressure.

Redwood pulp possesses to a high degree the property of "wetness" or ease by hydration. It is interesting to note that the pulp from southern cypress has the same charactersitic; in addition the wood of the living tree in both species has a very high water content. The redwood and bald cypress are not only related botanically, but geographically as well. They represent the oldest forms of our modern trees and their remains occur as far back as the Miocene. Perhaps the cellulose in these species has never advanced in chemiacl dehydration as in some of the later conifers. The wood cooks so easily by the sulphite process and giving a pulp that hydrates so readily, that advantage should be taken of this opportunity for converting it into glassine and other grease-proof papers. For this purpose the natural color should not be objectionable.—The Timberman.

Never have I seen Thee so clearly as when I was breaking bread to the hungry; never have I loved Thee so dearly as when I soothed a brother's pain.—Ex.

Vancouver Island Coal

REPORT BY J. D. MACKENZIE AFTER TWO YEARS OF FIELD WORK

To have available fuel is an important consideration in the location of a pulp and paper mill Ed.

"After the accumulation of strata forming the northern series, they were folded by earth movements, and the same movements caused an uplift which has subjected these rocks to the influence of erosion. For this reason scores of cubic miles of sediments containing an incalculably large tonnage of coal have been lost by being swept away, and now lie finely distributed over the bottom of the Straits of Georgia.

"Present areas underlain by the Nanaimo series are thus but remnants of a former, much more extensive covering of sedimentary rocks.

"Three principal areas along the southeastern coast of Vancouver Island now underlain by rocks of the Nanaimo series are the Comox area, the Nanaimo area (including the gulf islands), and the Cowichan area. A fourth area underlies the Alberni district, in the interior of the island.

"Coal has been found in workable thickness in portions of Comox and Nanaimo areas, but no workable seams are known in the Cowichan or Alberni areas.

Mineable Coal Formerly Over-estimated

"I have already pointed out that there are only three workable coal horizons in the whole of the 7,000 to 10,000 feet of the Nanaimo series, and that the presence of sedimentary rocks of upper Cretaceous age is of itself by no means a guarantee of the presence of workable coal.

"There are always losses in the mining of coal on Vancouver Island. A certain amount of coal is left in pillars and in seams that are too thin to allow it to be recovered. Some areas are so broken by faults that economical extraction is impossible. In others knobs of the underlying, barren, pre-Cretaceous rocks project through certain portions of the seam, interfering with ventilation as well as with the placing of haulage roads. Considerable areas of coal may be lost by mine fires, excessive gas, water or other causes.

"It is no exaggeration to state that over considerable areas of Vancouver Island there are mines in which scarcely 50 per cent. of the coal actually in the ground has been extracted, because of conditions quite beyond the control of the operators.

"When all these modifying circumstances are taken into consideration it is clear that a figure far short of the 1,340,000,000 tons previously estimated would be nearer the actual coal recoverable from the Nanaimo area.

"A careful examination of the data given by scientists who examined the field in the past shows that the popular interpretation of their statements in relation to the amount of coal recoverable on Southern Vancouver Island is not warranted, but nevertheless the impression of the unlimited nature of the coal of Vancouver Island persists."

Dr. Mackenzie stated that a great amount of prospecting has yet to be done in the Island coal fields. There is, he states, a large area between Courtenay and Campbell River that will require expensive and detailed prospecting.

"The coal measures of Vancouver Island" is the subject of a report prepared by Dr. J. D. Mackenzie, head of the British Columbia office of the Canadian Geological Survey, who has been engaged in the researches indicated for the past two years. He is of the opinion that the amount of recoverable coal on the Island is considerably below what has been estimated.

He points out that there are three workable coal horizons in the Nanaimo district, and only one in the Comox district, the latter lying over the pre-Cretaceous or barren formation and disturbed by protrusions of the latter in places.

Coal Seams Restricted in Extent

While opinions have differed greatly in the past it was generally supposed that the Lower Wellington. New-Castle and Douglas seams, as occurring in the Nanaimo district, continued for a considerable distance beyond the present known areas. Mr. Mackenzie is of the opinion, however, that they are restricted by contact with pre-Cretaceous formations as they run north towards Cumberland, and that they do not extend far beyond the present workings.

Dr. Mackenzie also emphasizes the importance of the fact that in many submarine mines only 50 per cent. of the coal in the seams is recoverable, due to geological peculiarities, and that seams less than three feet in thickness are of little or no value.

With the experience of two seasons spent in the coal-bearing areas of southern Vancouver Island, and the advantage of extensive diamond-drill prospecting carried on by the coal mining companies of the Nanaimo, Comox and Alberni districts, Dr. Mackenzie has been in a position to make geological calculations with more accuracy than government geologists who have hitherto investigated these coal fields.

Former Geological Investigations

Discovered in 1835 and worked by the Hudson's Bay Company for a time, the coal beds of Vancouver Island were first investigated by the Dominion Geological Survey in 1871, when James Richardson, examining the coal-bearing rocks from Comox to the southern gulf islands, spent parts of five seasons in the field. In 1911 Dr. C. H. Clapp studied the Nanaimo field, and his memoir has since been the basis for many operations there. Dr. Mackenzie has been entrusted with the task of bringing government reports on this area up to date, and he has since carried on extensive research.

Geology of the Coal Measures

"Conditions on the island are those to which geologists give the name of 'progressive overlap,' the significance of which is considerable in regard to the coal resources of Vancouver Island.

"Because of this overlap the coal-bearing horizons of the Nanaimo area are not found north of Nanoose, and for some reason not wholly understood the coal-bearing horizon of the Cumberland area does not contain coal south of Deep Bay.

"Another point the study of these coal measures has brought out is that the coal horizon does not always contain workable coal seams, and that in certain areas seams are so distrubed by deformation that considerable areas have been rendered unworkable.

Lessons From Dr. Bakers' Trip

Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association, has given SHEARS special interview of the conditions as he saw them in Northern Europe last summer, when he spent two months studying the condition of the paper industry in Scandinavia, with George W. Sisson, Jr., former president of the Association. A copy of this article has been sent on to the Pulp and Paper Magazine and is presented here even at the risk of repeating one or two points. To do so will serve to emphasize their importance.—Ed.

"Political and economic conditions are changing so rapidly over there on the other side," he said "that it is dangerous to prophecy as to what competition is going to be Scandinavia (and I include Finland in that) is going to produce more pulp and more paper. They did not over-cut their forests seriously during the war. The Swedes did over-cut somewhat. They made lots of money during the war. It came easily and it has gone easily. I don't know that they are much better off than some of the other countries, but their forests are splendidly managed and they are managed so that they can increase production if they care to do it, and in my opinion they care to do it. We can figure on more pulp and paper being laid down here in America from these countries than in the past, and that even with our high tariff law. Of course, our tariff law does not affect the pulp situation at all, though it does protect the paper industry. I can't speak of all of the paper industry in Sweden and Finland without referring to the forests, but I am simply making a reference to them. I am not going to describe them at any length.

"Those northern countries are forest countries, much like portions of Canada. Their forests mean a great deal more to them than our forests mean to us, because the forest is the big resource. Scandinavia has been the wood yard of Europe for many years, and will continue to be, and they have learned that this forest of theirs, their main natural resource, must be taken care of, and must improve, and must be made to give them what they need for their industries. In fact, the forests of Scandinavia are the very life-blood of the commercial and industrial life of that country, so that the Swedish pulp and paper manufacturer looks at the paper mill through the forest, and we look at the forest through the mill.

"In going through their mills and in talking to them about their raw materials you can't help getting the impression that they consider permanency in their industry all the time.

"Every effort seems to be made to develop a permanent pulp and paper industry, and I am afraid sometimes that we don't think enough of permanency. We are too busy figuring on how long it is going to take us to clean up on the investment, and get out from under, as the expression is and let somebody else carry the burden. That is, we have not yet developed the idea of a cohesive permanent paper industry based on permanent supply of raw material.

"Wood is our capital in this industry over there, and the Swedes and Finns are careful not to draw upon their capital. They are using the interest, that is, the wood they are producing, but are maintaining their forest capital, and are going to maintain it in such a way that they can lay pulp and paper down here for a long time to come. When you stop to think that Sweden is only three times the size of the state of New York and has fewer people than the city of New York, and that Finland is about the same size as Sweden and has less than half the people as the city of New Yok, you can be amused at times that those little countries were disturbing us. They are not going to disturb us. The total amount of material brought in here is not going to be large compared with what we produce.

"There are certain reasons why they can lay pulp down here cheaply, and I am going to draw that picture hastily. they have this great resource of forest, well handled and well managed. It would be like taking the state of New York and putting a productive forest onto it to supply the mills in the East. They have a productive forest almost at their door.

"Common labor in Scandinavia as we saw it does not cost them much more than fifty per cent of what it costs us. Women work in the mills, all the way through, great big strapping women, working for 5 cents an hour. Of course, that means more over there.

"Transportation is cheap. Sweden is splendidly situated to get the wood out of her forests, and down to her mills. Most of the rivers rise in the mountain and flow down into the waters of the Gulf of Bothnia, and they can cut timber and float them down to the mills at the mouths of the rivers and then they can run steamers right up to the mill, the saw mill or paper mill. Almost every pulp mill has a saw mill in connection, and load right at the mill onto ocean going steamers that will lay the product down in Great Britain or this country. They have splendid water power, and they are utilizing it. They have no coal. Wood is burned everywhere—on the railroads and everywhere else.

"In the mills I saw almost no coal at all. Another reason they are able to lay pulp and paper down cheaply here is that they have, by necessity, been forced to work economically. They are a thrifty, saving people.

"They use up the wood more effectively than we do. The saw mill will take its waste by an overhead conveyor into the sulphate mill and they will use for instance in the manufacture of kraft pulp when we are using an average of five hundred pounds of salt cake, they use three hundred. They use less sulphur than we use, and they manufactur alcohol.

"They are no better mechanics than we are, though splendidly trained. One thing that impressed me was that the technical men seemed to know more of our situation than we know of theirs. Many of their men have been to this country, and the reason of that is that the average Swedish and Finnish mill has been developed for the production of pulp and paper for a foreign market, where we have developed ours for domestic market. I think the development of their mills for foreign market has given them a little more of a world vision.

"I just want to repeat that, in my opinion, Scandinavians are going to continue to produce pulp and lay it down here at very low prices, and they are going to be able to increase the production of pulp if they care to do it. They are organizd—tremendously organized—but the government lets them do a great many things our government will not let us do in our Association.

"Necessity has forced them together and they are marketing, as a result of that necessity in an efficient way."

PULP AND PAPER PLANT FOR ST. STEPHEN N. B.

A pulp and paper plant will be established here shortly, according to reports. It is understood that options on property on the St. Croix River have been secured in connection with the project. The plans, it is said, call for a plant of fair-size capacity, and it is understood a considerable portion of the capital is to be provided from American sources.

Cheerfulness may not always be possible, but pleasantness comes within the range of every circumstance.

EXPORTS OF PULP AND PAPER FOR OCT. 1922

The exports of pulp and paper from Canada in Oct. were valued at $10,405,433, a small increase over the previous month when the value was $10,332,283. Compared with October 1921, however, when the value was $8,953,225 this year shows an increase of $1,452,208.

Details for October 1921 and 1922 are as under:

	October 1921		October 1922	
	cwts.	Value.	cwts.	Value.
Paper:				
Newsprint	1,314,157	$5,510,604	1,631,042	$5,811,954
Book Paper . . .	2,239	17,718	6,983	49,035
Other paper . . .	....	338,397	....	607,977
		$5,866,719		$6,468,966
Pulp:—				
Sulphate (Kraft)	244,079	$ 743,693	281,777	$ 875,876
Sulphite blchd...	111,147	459,613	361,497	1,432,687
Sulphite unblchd.	271,018	852,341	368,215	885,601
Mechanical . . .	557,188	1,031,859	528,705	742,303
	1,183,432	$3,087,506	1,540,194	$3,936,467

It will be seen that exports of all grades of paper and pulp, except mechanical, show considerable increases over the corresponding month of 1921, so far as quantities are concerned. The fall in prices accounts for the failure of the values to appear in like proportions.

The principal countries of destination of these imports in October were as under:

	Paper	Pulp	Total
United States	$5,510,897	$3,170,843	$ 8,681,140
United Kingdom	182,406	520,776	703,182
Other Countries	775,663	244,848	1,020,511
	$6,468,966	$3,936,467	$10,405,433

Pulp wood exports for the month were 93,403 cords valued at $992,934 compared with 94,351 cords valued at $974,568 in September. In October 1921 the exports were 47,203 cords valued at $587,674.

For the first seven months of the fiscal year, ending October 31st, there is a noticeable gain over the previous year both in pulp and paper as the following table shows:

	7 months 1921		7 months 1922	
Paper:—	cwts.	Value.	cwts.	Value.
Newsprint . .	7,671,514	$36,788,367	10,917,028	$38,702,094
Book Paper . .	14,673	176,736	26,330	186,304
Other Paper..	....	2,281,124	....	3,647,239
		$39,246,227		$42,535,637
Pulp:—				
Sulphate (kraft)	1,133,882	$ 4,104,846	1,739,644	$ 5,331,771
Sulphite blchd..	770,707	3,666,996	1,894,649	7,193,809
Sulphite unblchd	1,348,930	4,950,205	2,593,881	6,396,660
Mechanical . . .	2,646,604	6,169,618	3,719,012	5,187,429
	5,900,123	$18,891,665	9,947,186	$24,109,669

Exports of pulp-wood for the seven months period were 599,415 cords valued at $6,222,835 compared with 468,591 cords valued at $6,134,459 for the corresponding seven months of 1921.

BECKER & CO. LONDON ISSUE

London, Nov. 27.—(Star Cable).—Becker and Company are issuing £300,000 one pound seven per cent notes at 99, covering deal with Saguenay Pulp and Power Company for 1,700,000 tons pulp which they have resold. They are furnishing $1,473,600 to Saguenay.

PERMITS WILL BE AUCTIONED

Permits for the cutting of timber will be put up at auction at the legislative buildings on the 12th of December next, according to notice contained in the last issue of the Quebec Official Gazette. The following concessions are offered for the cutting of green and other trees: Abitibi region, Township of Louvicourt East, 31 square miles; Township of Fiedmont, 14½ miles; St. Maurice region. Township of Montpetit, 25 square miles; Lake St. John district, Chamouchoaune river, 3 square miles; Saguenay region, township of Laval, 8 square miles; Township of Callieres, 10 square miles; Riviere Bergeronnes, 11 square miles; Bonaventure region, Township of Carleton, 10 1-3 square miles; Township of Nouvelle, 4½ square miles; Township of Mann, 4¾ square miles. The Department of Lands and Forests also offers for sale permits for the exclusive cutting of timber killed by fire or by insects in the Abitibi region as follows: Township of Varsan 10 square miles; Malartic 2½ square miles; Fiedmont, 24½ square miles. The usual conditions are to be fulfilled.

SPRUCE FALLS PULP MILL NEAR COMPLETION

Kapuskasing, November 27. — The plant of the Spruce Falls Pulp Company is receiving finishing touches and will go into operation within the next two weeks. The plant contains five digesters and will have a capacity of between 300 and 400 tons of sulphite daily.

Power for the time being is generated by steam turbines, producing 2,500 horse power. Plans for the future include the development of water power some twenty miles down the river, where 3,000 horse power will be generated.

The company has big forest reserves, the area including the first soldier settlement following the European War, adjacent to which is the Dominion Government Experimental Farm, cleared and placed under cultivation by subjects of enemy nations, who were interned during hostilities.

WADSWORTH BACK FROM JAPAN

Mr. H. B. Wadsworth, 51 East 42nd Street, New York, returned October 28th from a successful trip to Japan.

While there Mr. Wadsworth made new connections with one of the largest importing firms in Japan, severing his relations with The Meishosha Company, Ltd., of Japan. In the future the New York end of the business will be conducted solely by Mr. Wadsworth.

Mr. Wadsworth found business in general in the Far East rather quiet but reports that there is every indication of a decided improvement in 1923. Mr. Wadsworth visited practically all the principal paper mills during his three months' stay and secured quite a number of orders for paper mill supplies.

Mr. Wadsworth is being congratulated by his many friends in the Trade upon the arrival on October 25th of a nine-pound daughter.

CAMOUFLAGE

Teacher: "Who can give me a definition of camouflage?"

Johnnie: (Whose father is a strong safety booster) "Camouflage is talking safety, but practicing carelessness."

British Trade News

(From Our London Correspondent)

London Nov. 14, 1922

Messrs. Thomas Owen & Co., Ely Paper Mill, Cardiff, one of the British newsprint producers announced an interim dividend at the rate of 5 p. c. per annum on the ordinary shares for the past half-year. A year ago they paid no interim dividend.

An Innovation

The Joy Millboard Coy. Ltd., of Maidstone, Kent, is now making a new product which is called Joy Wall board. It is really a substitute for lath or plaster used in the building trades and its appearance on the market is heralded with considerable approbation. In October the company competed its first year.

Messrs. A. H. Peebles & Son, Ltd., are also scoring success with a high-grade chromo, enamel, litho vanishing papers which they are producing with the latest modern plant. They have a London office at 237 Upper Thames St. E. C.

Government Laxity

Owing to the delay on the part of the Imperial Government in dealing with the Wall Paper Manufacturers' excess profits taxation, no settlement of the liability has yet been made, in consequence of which it is impossible at the present time to wake up the company's accounts showing the exact position of affairs. It looks as though things have gone better, however, with the company, for an interim dividend of 4 p. c. is announced, this being the first payment since 1920.

The annual general meeting of the company will be held on Dec. 21 and if it is possible to obtain a settlement of taxation matters with the Government in time to complete the accounts to August last, these will be presented to the meeting. If not, it is proposed to adjourn the meeting to a date when the accounts can be completed.

Readers of the "Pulp and Paper Magazine" can readily see how the Imperial Government hampers industry under their reginue. For the past twelve months the unfortunate wall Paper Manufacturers are trying to get back their money from greedy authorities. There is no race under the sun would stand such treatment, except Englishmen, and it is appalling that a business concern should be held up like the Wall Paper Manufacturers.

More Pulp

It is stated in London pulp circles that a new company has been floated and obtained a large concession at Elizabethville, Belgian Congo, for the production of pulp. Papyrus grass will be used as the raw material. It grows plentifully in the district and yields 37.8 p. c. of cellulose. The first year's production of pulp is expected to reach 20,000 tons and the cost of the undertaking is close on 2 1-2 francs. Londoner's are awaiting further particulars about the company and the manufacture of the pulp.

Pulp Prices Up

A sharp rise in pulp prices has caused considerable apprehension amongst paper makers. Sellers, of pulps, however, have taken a bold step, with Scandinavian influence behind it, and if paper producers are compelled to pay more for their raw material it stands to reason that buyers of paper will be expected, in some cases, to pay a little more. Then the foreign competitor steps in with the cheap material and the battle will rage between the British paper maker and the pulp agent once more.

Pulp sellers, however, cannot be expected to constantly range their quotations on low levels. They must have a look-in sometime or other and they feel the time is ripe now for extra demands. Many contracts for chemical groundwood have been settled for part of 1923.

Prices are now about as follows:—Bleached sulphite £23, Easy Bleaching £16; Sulphite newsprint (strong), £14 10s.; Unbleached soda (No. 1) £13 1-2; Soda Kraft (strong) £13; Groundwood (Pine, wet) prompt delivery £4 1-2; dry £9 1-2.

Agents and Dealers Dine

About 275 dealers, agents merchants, and their friends in the paper industry dined together the other evening in London under the presidency of Mr. Lionel Savory. These gentlemen are known as the Stationers Social Society, and a jolly band they are. As a rule business is discussed publicly at the socials, except an occasional growl when trade is bad, but good feasting, golf, bowling, and music are topics that will readily be given way to instead of the prices of paper. This year's visitors included Mr. H. E. Poole who is in England for Messrs. B. J. Ball of Sidney.

PAPER MARKET MORE STABLE

New York, Nov. 22. — "The tone of the paper market has been one of increasing stability to a degree that has not been felt for many months past," says the monthly market review of The Paper and Pulp Industry, the official bulletin of the American Paper and Pulp Association to its members.

"That the tendency, owing to the certainty of increasing costs, will be upward for some time to come seems certain. The tendency toward a runaway market, which was feared in some quarters, was moderated by the discussions at the recent Chicago convention, bringing the realization that efforts to take advantage of the return of prosperity forcing prices to abnormal levels might be unfortunate for manufacturer and merchant alike.

"Prices of raw materials entering into the manufacture of paper have like wages, shown a tendency in advance.

"The production and shipments of newsprint paper fell off somewhat from the high records set in August, although at present levels the industry is far ahead of a year ago. September consumption of newsprint increased to 172,802 tons, the largest for several months. Stocks showed a little change. There was a slight increase in the production of paper board, while most other kinds showed slight decreases compared with August.

"It is now becoming evident that the new tariff bill will help the industry to some extent, as compared with the rates under the old Underwood measure, but not to the extent that had been hoped, and the protection afforded is not adequate to represent the difference in cost between American and foreign manufacture."

NEW IDEAS

Next to character, a new idea is the most valuable thing in the world. A new idea is something that anyone, rich or poor, young or old, can get. Every progressive employer will cheerfully pay for a new idea. The best way to get an increase in salary is to pring your employer a new idea. New ideas are the only things that have made money for me; new ideas are what every one makes money with. I have yet to hear of a person who carried a good idea to his or her employer and did not get rewarded for it. All of us can cash in something on every worth-while new idea.

—Roger W. Babson

Technical Section

REVIEW OF RECENT LITERATURE

D. — Groundwood Manufacturing and Equipment

D-4 M-12 Automatic Pulp Grinder Regulation. CARL E. BRAUN. **Paper Mill**, xlv, No. 28, 4, 6, (July 22, 1922); **Pulp and Paper**, xx, 715-716 (Aug. 24, 1922). A description of the Westinghouse automatic load regulator for motor driven grinders as installed at the Camas plant of the Crown-Willamette Paper Co. The regulator consists essentially of a motor opening and closing a valve placed in the main water pressure line which in turn controls the pressure in the grinder cylinders to be operated. The connection are shown diagrammatically, and are arranged so as to keep the total mill load as even as possible. — A.P.-C.

E. — Acid Processes of Pulp Manufacture and Equipment

E-0 F-0 Some Economical Aspects of Combined Sulphate and Sulphite Operation. WALTER CLIFFORD, Hummel-Ross Fibre Corporation. **Paper Ind.**, iii, 1247 1248, (Dec. 1921). Combining the manufacture of sulphate and sulphite would render lumbering operations more economical as jack pine, poplar, and other woods unsuitable for the sulphite process could be culled out at the mill and pulped by the sulphate process. The sulphite process could be carried out with soda instead of lime as a base, the sulphite waste liquor being recovered in the same way as and along with the black liquor, with a loss of about 25% of the alkali, which would be more than compensated by decreased bleach consumption. Further advantages are improved quality of the pulp, and elimination of trouble from ''liming'' of the pipes and of pitch troubles. — A.P.-C.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-3 Alkali Consumption in the Manufacture of Wood Pulp. A. KLEIN. **Papier Ztg.**, xlvi, 4365, (1921); **Chem. Abs.**, xvi, 645, (Feb. 20, 1922). While in laboratory cooks over 20 volume-% of the weight of the wood of alkali are used in digestion, the consumption in the mill is considerably lower. Figures from several mills are given. — A.P.-C.

F-4 Old Method of Evaporating Liquor. H. LUNDBERG. **Svensk Pappers-Tid.**, xxiv, 217, (1921); **Chem. Abs.**, xvi, 645, (Feb. 20, 1922). A Steinmuller pan of 212 sq. m. surface was installed in front of the soda furnace and fed with liquor from the diffusers. The liquor was then led to the triple evaporator and evaporated to a suitable concentration for the soda furnace. This method is not suitable for the sulphate process. — A.P.-C.

F-5 Sulphate Digester Linings. P. C. AUSTIN, Bathurst Lumber Co. **Paper Mill**, xlv, No. 21, 44, 46, (June 3, 1922), **Paper Trade J.**, lxxiv, No. 23, 42, (June 8, 1922); **Paper**, xxx, No. 16 14, 16, (June 21, 1922). Owing to trouble from leaky digesters, one of them was lined with a one-inch backing of equal parts of quartz and cement mixed with a solution of waterglass, and a single layer of fire-brick laid on its side, set in the same cement mixture, which stands up well under the action of sulphate liquor. No trouble was experienced in cooking and the steam consumption was somewhat lower than in unlined digesters. Better pulp yields and longer life for the lining would be obtained with regular digester bricks made to shape. — A.P.-C.

G. — Pulp Treatment and Drying — Operation and Equipment

G-9 Drying of Pulp. J. BOIJA. **Svensk Pappers-Tid.**, xxiv, 298-299, (1921); **Chem. Abs.**, xvi, 644, (Feb. 20, 1922). The determinations were made on lightly bleached sulphate pulp from the Nensjoe plant. Six curves show the percent of water in the pulp at each set of rolls in the drying machine, the drop in the water content as the pulp is dried at 105° C., the comparison of the actual with the determined water content, and the water content of cellulose in air of various humidities. The water content of the pulp is about 0.7% higher than tests usually show.

K. — Paper Manufacturing and Equipment

K-1 K-7 M-12 Green's Slowness Tester. Paper Mill, lxv, No. 25, 4, (July 1, 1922); **Pulp and Paper**, xx, 765-766, (Sept. 7, 1922). The instrument is designed with a view to simplicity of operation and accessibility for cleaning. The upper chamber has a capacity of exactly 1,000 g. of stock, and there is a standard perforated metal floor immediately above the bottom lid of the chamber. A sufficient quantity of stock is mixed to known density (based on bone-dry or on centrifuge determination), well stirred, and the chamber filled with the lower lid clamped. The upper lid is clamped tight, keeping the pet-cock open, the latter is then closed, the lower lid is released and allowed to swing out of the way, and the pet-cock is opened. The water drains into a two-orifice funnel, the overflow from the side-orifice being collected in a graduated jar. Tests can be performed at the rate of two a minute. The maximum error is 2.5%. — A.P.-C.

K-1 Estimation of the Degree of Beating of Paper Pulp. E. W. L. SKARK. **Papierfabr.**, xix, 569-576, (1921); **J. Soc. Chem. Ind.** xli, 9A, (Jan. 16, 1922). Microscopical measurement permit no safe conclusions to be drawn regarding the colloidal ''slowness'' of the beaten pulp and identical measurements have been obtained from two similar pulps (one much slower than the other through having been stored for 14 days in the drainer chest before beating) beaten under the same conditions yet giving totally, different types of paper. The author adheres to the type of apparatus originally described by him (See **Papierfabr.**, xi, 1358, 1913; **J. Soc. Chem. Ind.**, xxxii, 1103, Dec. 15, 1913) in which the rate of draining of 500 cc. of 2% pulp through a standard sieve is measured at half-minute intervals and curves are plotted showing the volumes of water passing in equal increments of time. It is very difficult to produce in the hollander a sufficient separation or longitudinal splitting of the fibers without a certain amount of shortening taking place at the same time. In the diagrams the proportions of short fibers to long is well indicated by a sharp bend in the cure. Long fibered pulps show the quickest initial velocity of draining and the presence of short fibers causes a subsequent slowing down. Pulp with uniformly short fibers but without much hydration show much slower draining at the start than those with long fibers; they have, however, a higher-initial velocity than hydrated pulps. Hydration or "wetness" is characterized by a slower rate of draining which tends to be more uniform throughout. The difference between the results obtained with basalt and bronze tackle, as regards hydration is very clearly shown by the curves; the time of beating in either case is indicated by the general inclination of the curves. The Schopper-Riegler pulp tester divides the water into quick-flowing and slow-flowing portions and this principle, if properly dimensioned, is capable of giving results in the majority of cases comparable with the Skark diagrams. The author has also made experiments with upward-flow meters which measure the flow of water from the pulp through a sieve in the bottom of a glass tube inserted into a body of diluted pulp. — A.P.-C.

K-4 The Production of Half-Stuff from Waste Papers. E. G. MILHAM. **Paper Mill**, xlv, No. 21, 34, 36, 54, 56, (June 3, 1922); **Paper**, xxx, No. 15 7-10, (June 14, 1922); **Paper Trade J**, lxxiv, No. 23, 36-38, (June 8, 1922); **Paper Ind.**, iv, 421,423, 425, (June, 1922). A general description and discussion of modern practice, from which he concludes that (1) The screen system of sorting is more expensive than the carrier system, but gives a better quality product. (2) Except where the vomiting tub process is used, violent dusting should be avoided. (3) The rotary and vat processes of cooking are practically on a par as far as economy and efficiency go. (4) The beater washer is wasteful and inefficient. — A.P.-C.

K-7 M-12 Device for Measuring the Roll Pressure of Beaters. MULLER. **Zellstoff u. Papier**, ii, 22, (Jan. 1922); **Pulp and Paper**, xx, 564, (July 6, 1922). A weighing appliance is combined with the beater roll journal, by means of which the true weight of the beater roll and the other forces can be balanced. The arrangement is comparatively simple and can be attached to existing beaters. An electrical pressure recorder can also be added. — A.P.-C.

K-7 Report of the Committee on Beater Furnish. H. F. MILLER. **Paper Mill**, xlv, No. 21, 14, 16, 78, (June 3, 1922); **Paper Trade J.**, lxxiv, No. 23, 48-50, (June 8, 1922); **Paper**, xxx, No. 20, 7-10, (July 19, 1922). Recommendations as to the best methods of furnishing wood pulp (slush, lapped and hydraulic pressed, purchased), rags, size, alum, and filler, so as to obtain the actual amount of material furnished as accurately as possible. — A.P.-C.

K-7 M-12 Freeness Testing of Pulp. F. M. WILLIAMS. **Paper Mill**, xlv. No. 21, 26-27, (June 3, 1922); **Paper Trade J.**, lxxiv, No. 23, 43-44, (June 8, 1922); **Paper**, xxx, No. 19, 10-11, (July 12, 1922). Brief discussion of the importance of proper control of beating by measuring the degree freeness, together with a description of the Williams Freeness Tester, which is along the same general lines as the Schopper-Riegler tester. — A.P.-C.

K-7 Beater. K. A. THORSEN. Can. patent 222,980, Aug. 22, 1922. Also, Ger. patent 339,232. The beater roll is in fixed bearings, the pressure against the bedplate being adjusted by changing the position of the latter. The stock is fed to the roll from a conduit under the bedplate. — A.P.-C.

K-10 Technology of Rosin Sizing. E. J. TURNER. **Paper Mill**, xlv, No. 23, 16, 18, (June 17, 1922); **Paper**, No. 18, 7-8, 12, (July 5, 1922). Brief sketch of present-day practice, with particular reference to the use of high and low free rosin size. — A.P.-C.

K-10 Reason of Defective Sizing. E. ARNOULD. **Papier**, xxiv, 108-110, (March 1922). Translation by A. Papineau-Couture, in **Paper Ind.**, iii, 1273-1275, (Dec. 1921). See **Pulp and Paper**, xix, 862, Aug. 18, 1921. — A.P.-C.

K-10 Sizing Paper With Colloidal Rosin. F. STOCKIGT and A. KLINGNER. **Papierfabr.**, xix, Fest-u. Ausland Heft, 50-60, (1921); **Chem. Abs.**, xv, 2984, (Sept. 10, 1921). It is possible to size paper advantageously with colloidal rosin but only by the use of aluminum sulphate as electrolyte. The sizing process appears to take place in two phases. The first is the formation of an adsorption compound of rosin and aluminum hydroxide and the second the adsorption of this colloidal phase by the fibers. The trouble of saponifying pine rosin is eliminated by the use of colloidal rosin. The same degree of sizing can be obtained with the same amount of pine rosin as of colophony. The following physical and chemical constants of colophony and pine rosin are given: moisture 0.32, 1.32; specific gravity 1.084, 1.19; melting point 83°, 80°; ash 0.71, 0.65; insoluble in petrolic ether 4.9, 53.9; acid number 175.5, 119.6; saponifying number 184.6, 133.6; ester number 9.1, 14.0; rosin number 72.53, 117.3; 0.25 g. of pine rosin dissolves in, cc. of alcohol at 50°, 0.09 g. at room temperature. — A.P.-C.

K-10 Substitutes for Rosin in Paper Sizing. A. KOLB. **Papierfabr.**, xix, 1141-1144, (1921); **Chem. Abs.**, xvi, 493, (Feb. 10, 1922). The alkali salts of fatty acids (soaps) may be used in place of rosin. Salts of stearic acid are the most suitable. Used in connection with waterglass these soaps gave a paper which not only had a pronounced size fastness but also a good feel. Alum is necessary for the precipitation of the sizing colloids, and the composition of the precipitate depends somewhat on the manner of precipitation. All precipitates are liquid at 100° C., which renders them especially valuable as sizing agents. The use of waterglass increases the surface area of the sizing material and thus increases the sizing action. The alum solution should not be added in too great an access, since an acid reaction will cause the liberation of fatty acids, which do not separate in as finely divided a condition as the aluminum soaps and, therefore, are not capable of sizing as large a surface. The best results are obtained with stearic acid, sodium silicate, and alum solution. — A.P.-C.

K-12 Paper Machine Drives. R. W. LEEPER, Management Engineering and Development Co. **Paper Mill.**, xlv, No. 29, 4, 6, 8, (July 29, 1922); **Pulp and Paper** xx, 735-737, (Aug. 31, 1922). A Brief description of the Marshall-train, the Ferguson drive, the rope drive, the Walmsley drive, and the General Electric, Harland and Westinghouse sectional individual motor drives, with a brief discussion of their merits and drawbacks, together with a brief reference to the constant line equipment. — A.P.-C.

K-12 M-6 Electrical Sectional Paper Machine Drive. S. A. STAEGE, Westinghouse Electric and Mfg. Co. **Paper Mill**, xlv,No. 21, 10, 12, 74, 76, (June 3, 1922); **Paper Trade J.**, lxxiv, No. 23 28-31, (June 8, 1922); **Paper Ind.**, iv, 411, 413, 415, (June 1922); **Paper**, xxx, No. 17, 9-11, (June 28, 1922); No. 18, 9-10, 17, (July 5, 1922). A description of the Westinghouse sectional paper machine drive and of its merits. — A.P.-C.

K-12 M-7 Reclaimiing the Waste Heat in a Paper Machine Room. J. O. ROSS. **Paper**, xxx, No. 17, 7-9, (June 28, 1922); **Paper Mill**, xlv, No. 21, 38, 40, 42, (June 3, 1922); **Paper Trade J.**, lxxiv, No. 23, 26-27, (June 8, 1922); **Paper Ind.**, iv, 405, 407, (June 1922).

(Continued on Page 1056)

PULP AND PAPER NEWS

With power to construct, build and operate pulp, paper and lumber mills, the Scott Lumber Company, Limited, has been formed; with head office at Port Arthur, and an authorized capital of $40,000. Mentioned as among the incorporators in the Ontario charter just granted are William Scott, Oliver Schram and F. R. Morris.

According to word from Port Arthur, the demand for bushmen has become so great that one camp is offering between $40 and $50 a month for experienced men which is a good deal above the average pay.

The Canadian Bureau of Envelope Manufacturers has been formed with head office at Toronto and is now in possession of an Ontario charter. The organization has been formed for the purpose of developing the envelope manufacturing industry in its various departments and to put into effect benefits which will accrue to the advantage of the Bureau: to foster trade and commerce, to reform abuses, to diffuse accurate information, to settle differences between the organization's members etc. Among the incorporators are A. G. Parker, E. H. Ellis, W. S. Hulbig, Toronto, C. B. Martin, of Hamilton and R. W. Elliot, of Montreal.

The Strathcona Paper Company, Limited, has been granted an Ontario charter authorizing them to manufacture and deal in pulp and paper products of all kinds. The authorized capital is $600,000 and the provisional directors are W. J. Findlay, G. R. Finlay and B. E. Finlay. The head office of the company is at Strathcona, Ont. The Company is now manufacturing board.

A new paper box manufacturing company has been incorporated with head office in Toronto. According to the charter just issued the firm is to operate under the name of Heyes Bros. Paper Box Company, Limited. The provisional directors are I. L. Heyes, S. T. Heyes, T. A. Case, P. F. Heyes, and E. M. Heyes of Toronto.

H. S. Taylor, Chief Engineer of the Engineering and Development Company, Dayton, Ohio, was in Port Arthur a few days ago in connection with the taking over of the new plants of the Provincial Paper Mills, Limited at Port Arthur and the Fort William Paper Company, by their owners. The Port Arthur mills are putting in a 40-ton-a-day capacity book print mill, and the Fort William Company two newsprint paper machines . Mr. Taylor stated that the present installation would be followed almost immediately, in his opinion, by further extensions to both plants. He expressed the opinion that the head of the Lakes was becoming the greatest centre of pulp and paper manufacturing in Canada. Machinery at present being installed is arriving at Port Arthur in 65 carloads, 25 for Port Arthur and 40 for the Fort William mill.

The report of the Gregory Commission of the Ontario Government covering its researches into the Nipigon development was issued a few days ago in Toronto. The report advises that the Ontario Government meet the system's yearly deficit and carry the amounts thus advanced in a suspension accounts, to be repaid when the country shall have ultimately developed to an extent that would make power development profitable. It suggestts too that the time has arrived for the Government to insist that the Hydro shall lose no customers merely because of its refusal to alter its standard contract to apply to special cases. This recommendation is significant to the case of the Great Lakes Pulp and Paper Company, which has been unable to obtain from the Hydro a contract for the supplying of 10,000 horsepower annually in terms that its lawyers regard as enforceable. The Cabinet Council formally sent on to the Provincial Hydro Commission with instructions to re-enter into negotiations with the Great Lakes people on the basis of the pulp plant contract recently entered into with the Provincial Government. The Great Lakes Company, with its plants constructed, would require about 15,000 horsepower, the revenue from which would go a long way to help the Nipigon plant to a self-sustaining basis.

The American Sales Book Company, of which S. J. Moore, of Toronto, is President, a few days ago made a declaration of the last of the deferred dividends on the preferred stock, and an initial dividend on the common, which seems to presage a successful year. The preference stock dividend is for 1¾ per cent. and will be paid on Dec. 15 and the dividend on common is for $1.60 per share, being 8 per cent. thereon and is for 1922. The seven per cent. cumulative preferred dividend was deferred for the year 1915 and for nine months of 1916.

Professor H. Michell, of McMaster University, Toronto, has compiled a table showing the average market prices ruling at the middle of November of 20 bonds and 43 stocks, arranged according to the usual investment classification and fields of industry. The average for pulp and paper stocks is given as 70.1.

S. J. Frame, Toronto, secretary of the Canadian Paper Box Manufacturers' Association, recently addressed a gathering of the Boston Carton Club, describing the organization and work of the Toronto Carton Club.

The Board of Trade of Sault Ste. Marie, Ont., is negotiating with a company which proposes to establish an industry in the town which will use a by-product of pulp in its operations.

George H. Millen, President and General Manager of the E. B. Eddy Co., of Hull, has written the Sault Ste. Marie Board of Trade advising the board that the town's claims would be considered when the company took up the question of establishing a branch factory for the manufacture of matches.

Word has reached Toronto that the Whalen Pulp and Paper Company has resumed work at the big Swanson Bay plant in B. C. and 250 men are being employed. It is stated that not only will the company open the pulp plant, capable of turning out 50 tons a day of sulphite pulp, but both sawmill and shingle mill will be producing shortly. In all the Whalen Company will be able to put 250 tons of pulp on the market every month with the three plants operating. The pulp mill at Port Alice turns out 100 tons, Swanson Bay 50 tons and Wood Fibre 100 tons.

The Spruce Falls Company, Limited, state that they are now contemplating the installation of a newsprint machine at their new plant in Kapaskasing, Ont. The mill, which will be in operation in a few days now, will turn out 100 to 120 tons of unbleached sulphite daily.

A. E. Wicks, of the Haek Lumber Company, Limited, whose sawmill and rossing plant are at Monteith, Ont., was in Toronto a few days ago on business. He states that his company has contracted for 40,000 cords of pulpwood during this season, which is one-third more than last. All this will be rossed at Monteith and in the plant at Wasach, ten miles south of Monteith, which will be built in the near future. Two new barkers, turned out by the Canadian Barking Drum Company, will be installed, one at Monteith and the other at Wasach. The Hawk Lumber Company will saw about a million feet of spruce and jack pine during the coming year.

Judgment for plaintiff to the amount of $26.00 was awarded by Judge Morson in Division Court in Toronto last week in the Queen City Paper and Twine Company against Mr. and Mrs. Landau for that amount of goods sold and delivered.

Edward Silver, Tour Boss of the Abitibi Power and Paper Company, has been appointed Superintendent of the company's paper mill. Mr. Silver started in the paper game in 1906 hustling broke at Augusta, Maine, and he was worked for the International Paper Company, the Great Northern and the Henry Paper Co., at Lincoln N. H. He is considered a first class paper maker.

The Canadian Vegetable Parchment Company, Ltd., Merritton and Ste. Catharines, Ont., did a good stroke of business in an advertising way when they set up an attractively decorated booth at the Royal Winter Fair which was in progress at the Coliseum in Toronto for a week and which was pronounced the biggest thing of its kind on the continent. Through the medium of their booth at the fair the Canadian Vegetable Parchment Co., Limited, got into touch with thousands of dairymen throughout Canada and demonstrated to them and to others interested in their various lines the virtues and merits of the firm's products. Samples of butter wraps, box liners, ham wrappers, lard pail covers, cooked meat wraps of all kinds, lobster can wraps, fruit and jam jar circles, pultry and poultry head wrappers, milk can tops, shredded parchment for packing etc.—all made from Purity Parchment—were on display and a good deal of interesting information concerning the process of manufacture and the utility of the goods was imparted by J. W. Elliot of the sales staff of the Victoria Paper & Twine Company, Limited, Toronto, who had charge of the exhibit. J. Ebbell, of the American Writting Paper Company, Holyoke, Mass., was a caller on the Toronto paper trade during the past few days.

E. H. Wilkinson, head of the Wilkinson Paper Company, Limited, Wellington Street, Toronto, has returned from an extended business trip through the Maritime Provinces.

W. H. Sherriff, of the Hodge-Sherriff Paper Company, Melinda Street, Toronto, returned a few days ago from a business trip through the Canadian west to British Columbia and reports business conditions throughout the West as being fairly good.

George Davidson, of the Toronto office of the Howard Smith Paper Co., has returned from a business trip to Montreal.

G. T. Clarkson, of Toronto, has been appointed permanent Liquidator of the Nipigon Fibre and Paper Mills. The total liabilities are given as $561,467.40, comprising admitted claim, $7,243: unsettled ordinary claims, $313,713: unsettled preferred claims, $2,034: unsettled secured claims, $100,687: and possible liabilities on which no claim has been made, $137,000.

Matilda Cecilia, daughter of Mayor Battle of Thorold, and head of the Dextrine Company manufacturers fo adhesive and special sizind for paper manufacturers, was married in Thorold a few days ago to Leo K. Murphy of Port Dalhousie.

Mr. S. Rodier, of the Rolland Paper Company, Limited, who recently met with a serious accident, is now out of the hospital. It will, however, be sometime before he will be able to return to business.

Mr. I. H. Weldon, of the Provincial Paper Mills, Limited, and Mr. H. F. E. Kent, of the Kinleith Paper Mills, Limited, Toronto, were visitors to Montreal last week. Mr. Weldon stated that the Company's new mill is being constructed at a very satisfactory rate.

Mr. R. H. Ecclestone, one of the representatives of the Rolland Paper Mills, Limited, Montreal, has returned from a business trip to the West.

The Eastern lumber trade has lately picked up. Both American and domestic orders are coming in at a good rate, and prices have also strengthened. Large quantities of timbers have arrived in Montreal by vessels using the Panama Canal route. This wood is being used in harbour construction. A wholesale lumber dealers' association has been formed in Montreal.

A large paper company — the name of which is withheld — has options on sites in St. Stephen, N.B., for the erection of a big plant.

ARRANGEMENTS FOR ANNUAL MEETING

The arrangements for the annual meeting of the Canadian Pulp and Paper Association and sections are taking shape. The annual business meeting of the Association will be held on Friday, January 26, at the Ritz Carleton Holtel, followed by a luncheon and by the usual banquet in the evening. Applications for the tickets for the banquet are already being received. It is proposed to make a considerable variation in the program of the banquet. Several speakers of international prominence have been invited to the noon luncheon.

The annual meeting of the Woodlands section will be held on January 25 at the Ritz Carleton Hotel. The subjects to be discussed will be of great interest to the members. One is, how far a paper mill can go in the utilization of dead or dying timber. The idea is to obtain expressions of opinion from the technical men, and to get technical men to elucidate for the woodsmen just where the line is to be drawn in taking wood into the mill. It is hoped that Dr. J. S. Bates of the Bathurst Company, Limited, will lead the discussion. Another subject is what progress has been made in forest research work in Canada, and its future. Mr. Ellwood Wilson, of the Laurentide Company, Limited, will open the discussion. Logging cost accounting is also to be discussed with speeches from experts in this department. The social features will include a luncheon and a joint smoker with the Technical section of the Association.

As customary, the annual meeting of the (New York) Newsprint Service Bureau will be held in Montreal during Pulp and Paper Week. This will, of course, bring several American visitors to the city.

A discussion of the importance of proper machine room ventilation, showing the wastefulness of improper ventilation of the large economies which can be effected by a suitable reclaiming system, such as the Briner economizer. — A.P.-C.

K-12 M-12 Thermometer for Measuring the Temperature of Dryers. Pulp and Paper, xx, 544, (June 29, 1922). The thermometer consists of an aluminum frame to which are fitted three rollers and which carries a glass mercury thermometer, the bulb of which is very small to reduce lag and is also copper plated and provided with copper fins to make it more sensitive. surrounding the bulb is a small air space and behind it a gilded reflector. The three rollers are adjusted so that the bulb does not come incontact with the drying cylinder. An adjustable handle permits of holding the thermometer without the observer coming in contact with the surrounding machinery. — A.P.-C.

K-12 Method of Eliminating Froth on Paper Machine Wires. P. K. BAIRD. Can. patent 222, 767, Aug. 22, 1922. Electric antenae are provided above the wire, at the breast roll end, and are connected to a source of high tension electricity. — A.P.-C.

K-12 Fourdrinier Wire Tension. JOHN KEPKE, Jr. **Paper Trade J.**, lxxv, No. 3, 56, (July 20, 1922); **Pulp and Paper**, xx, 645, (Aug. 3, 1922). Normal operating tensions vary between 6 and 10 lb. per inch of width, with a maximum probably well under 20 lb. Samples of 60 and 70 mesh wires gave breaking loads of 133 to 141 lb. and 113 to 125 lb., respectively, per inch of width, elongation at rupture of about.20% and 17% respectively, and elastic limits lying between 30 to 45 lb. per inch width in both cases, the figure for the finer wire being probably higher than for the coarser.-A.P.-C.

K-12 Comment on the Standardization of Felts. WM. H. LEE, Lockport Felt Co. **Paper**, xxx, No.14, 20, 22, (June 7, 1922); **Paper Trade J.**, lxxv, No. 1, 59, (July 6, 1922). The project is deemed impracticable owing to varying conditions in different mills.-A.P.-C.

K-12 Sectional Electrical Paper Machine Drive. A. J. F. MONTABONE. Can. patent 222, 230, Aug. 15, 1922. A direct current, shunt-wound generator with separately excited field is connected through suitable switches with the main bus bars. The exciter also feeds into master field bus bars. Each sectional motor is shunt wound and is connected to the main bus bars through suitable switches, rheostats, etc. In gear or directly connected with the motor is an auxiliary motor generator with field coils in the circuit of the main motor and shunt field coils in circuit from the field bus bars. The armature circuit of the auxiliary motor generator includes supplemental field coils in the main motor and adapted for connection by a suitable switch to auxliary or tie bus gars. These coils are differentially wound with respect to shunt field coils supplied from a master field bus bar. When the system is running normally, if the load on one of the motors should decrease, its auxiliary motor generator would operate as a generator and would produce a current strengthening the main motor field, thus tending to lower the speed of the motor, and at the same time it would drive, through the tie bus bars, the other auxiliary motor generators as motors, in addition weakening the fields of the main motors. An increase in load would cause the reverse action to take place. Very close regulation is obtained. — A.P.-C.

K-12 Doctor for Paper Machine Presses. A. A. JUDD. Can. patent 222, 223, Aug. 15, 1922. A hopper is pivotally mounted to the press and is provided with a scraper resting on the top of the roll. Means are provided for supplying running water to the hopper to carry the pulp which has been scraped off the roll into a suitable chute, whence it is pumped to the mixing room. The pressure of the doctor against the press roll is adjustable. — A.P.-C.

K-14 "Batik" Designs on Paper. KOLMANN. **Papierfabr.**, xix, Fest-u. Ausland Heft, 39-43, (1921); **Chem. Abs.**, xvi, 828, (March 10, 1922). For the production of batik designs on paper a sufficient sizing and a moderate thickness (about 0.1 mm.) of the paper are necessary to obtain white resists. Paraffin wax of melting point 52° C is a suitable medium for executing the designs. The most satisfactory results are produced with wax at a temperature of 80 to 100°. The cracking of the wax is best performed by irregular crumpling by hand under cold water. The sheet is then transferred without drying to the dye bath, the temperature of which is not over 35°. A suitable concentration of dyestuff is 1 to 2 g. per l. Any dye suitable for cellulose, or acid dyes which can be fixed by the components of the sizing of the paper can be used. After dyeing, the wax is removed by steeping the paper in light petroleum. Combination shades and variegated resists can be executed by a second application of the designs after the removal of the wax from the first one. — A.P.-C.

M — General Equipment

M-12 The V-Notch Meter and its Application to the Paper Industry. L. G. CHASE. **Paper Trade J.** lxxv, No. 12, 49 (Sept. 21, 1922). A short history and description of the meter are given. The V-notch meter is claimed to fit in best in checking the recovery of soda in the soda process and in measuring bleach liquor. It requires very little attention, simply cleaning once a month and oiling the moving parts. Connections should be carefully located to prevent foaming. Caustic liquors must enter the meter tank near the bottom. — I.G.

M-0 "Autovapor" Electrical Evaporating System. E. WIRTH. **Bull. Schweiz. Elecktrot. Verein**, x, 347-355; **Chem. Abs.**, xv, 132, (Jan. 10, 1921). This process for the evaporation of solutions offers a means of utilizing hydroelectric energy instead of coal and is more efficient than the use of direct electric heating. The solution to be evaporated is brought to its boiling point by means of a steam coil. The vapor formed by the boiling is drawn off, compressed, and delivered into a coil in the ovaporating vessel. Here it is condensed and causes the evaporation of more of the solution. The hot condensate is then run into a pre-heater which contains a coil through which the solution is circulated before it enters the evaporator. From this pre-heater the cooled condensate is removed as distilled water. — A.P.-C.

M-0 Filtration and Filters. HENRY B. FABER. **Chem. Met. Eng.**, xxii, 17-19, (Jan. 7, 1920). Filtering problems may be classified as follows: (1) Those in which the slutries contains suspensions of colloidal nature; thes can hardly be dealt with except by highly specialized forms of apparatus and might even be regarded as a class not applicable to simple filtration; they are not considered. (2) Those in which the solid suspension may be separated from the liquid by means of a filter medium, which can be subdivided as follows; (a) Slurries in which the suspensions are fine but not colloidal; (b) Slurries containing relatively free filtering suspensions, which permit the liquid content to be separated readily from the solid, where the solid content is of considerable bulk, crystalline, or definite in its form; (c) Slurries which are principally mother-liquors, containing relatively large crystals, in which the liquid content can be drained readily, the crystals washed easily, the principal problem being the automatic and easy handling of the solids. A description is given of the various types of filtering equipment to be applied to the various groups and of their limitations, together with a short sketch of the development of these various groups. A description is also given of an experimental filter for classifying filtration problems, and of the method of using it and the deduction to be made from experimental results. — A.P.-C.

N. — Power Generating and Equipment

N-4 The CO_2 Record of Combustion Efficiency. C. C. PHELPS. **Paper Trade J.** lxxv, No. 12, 46-48 (Sept. 21, 1922). Diagrams are given showing the various losses of heat in combustion as indicated by the percentage of carbon dioxide in the flue gases. — I.G.

N-6 Steam Turbines and Valves for Paper Mill Power Plants. W. F. SCHAPHORST. **Paper Trade J.** lxxv, No. 12, 30 ff. (Sept. 21, 1922). A comprehensive discussion of the use of steam turbines as a source of motive power in paper plants. Their many advantages are pointed out, the relation between speed and efficiency is explained, and the advantages of the reciprocating engine and turbine combination are described. Details are given to show how purchases of steam turbines should be made. The second part of the article deals with steam reducing valves. — I.G.

N-9 Electric Power in the Paper Industry. H. W. ROGERS and E. E. WARNER. **Gen. Elec. Rev.**, xxiv, 559-562, (1921); **Chem. Abs.**, xv, 2547, (Aug. 10, 1921). A discussion of the applicability of electric power to the paper industry. The paper machine and its drive, consuming about 75 per cent of the total power, should be a separate unit, to insure speed regulation, flexibility of control, and uninterrupted service. The necessity of having steam prevents complete electrification unless live steam is used. Eleven boiler-horsepower per ton (909 kilos) of paper is sufficient; while the average load, with properly applied motors is about 80 per cent of the connected horse power with a maximum demand little greater. — A.P.-C.

N-9 The Application of Electricity to Paper Mills. E. E. FULLER. **Electrician**, lxxxvi, 171-174, (1921); **Chem. Abs.**, xv, 1074, (April 10, 1921). A detailed illustrated account of modern English paper mills. Among the topics considered are the potcher, the beating process, jordans, and strainers. Canadian and Norwegian pulps are used. — A.P.-C.

P — Safety and Welfare Work

P-2 R-13 Report of the Advisory Committee of the Society of Paper and Cellulose Engineers. F. GREWIN, et al. **Svensk Pappers-Tid.**, xxiv, 27-30, (1921); **Chem. Abs.**, xv, 1991, (June 20, 1921). The committee recommends the establishment of several technical schools for the paper and cellulose industries and present curricula for 5 different 4-year courses of study. — A.P.-C.

O — Water Supply and Treatment

O-3 Water Purification for Boiler Feed. F. J. CORLIUS. **Power Plant Engr.**, xxiv, 1063-1121, (1920); **Chem. Abs.**, xv, 5664, (Feb. 20, 1921). A full discussion of the usual properties of characteristic combinations found in boiler feed waters is given. Permutit, lime-soda, and hot process treatments are briefly described. Possibilities of compound treatment are mentioned. The author recommends frequent tests of water from the boilers to determine the internal conditions in properly adjusting whatever treatment is applied. — A.P.-C.

R — General

R-5 The Advance in the Paper and Cellulose Industry During the Last Twenty Years. JOS. SATOPLET. **Chem. Listy**, xiv, 19-22, 50-53, 65-66, 84-85, 99-101, 116-117, 127-130, 152-155, 179-181, 201-206, (1920); **Chem. Abs.**, xv, 1074, (April 10, 1921). An extensive review. — A.P.-C.

R-12. Budget Basis of Developing Costs. John BALCH, Horace P. Griffiths & Co. **Paper**, xxx, No. 20, 11-12, (July 19, 1922). A discussion of the budget system in cost accounting, showing the danger of using "actual costs" which must necessarily vary considerably owing to varying conditions in manufacturing. —A. P. -C.

R-12. The Stores Department. H. M. GRASSELT. **Paper Ind.**, iv, 655-65, (Aug. 1922). A dicussion of the function of the stores department, its importance and an outline of a satisfactory system of records, —A. P. -C.

R-13. Meeting of the Canadian Box Manufacturer's Association, Hamilton, Ont., June 23, 1921. Pulp and Paper, xix, 738-739, (July 14, 1921); 763-764, (July 21, 1921). Text of President C. T. Reid's address and of Secretary-Treasurer S. J. Frame's report for the year. — A.P.-C.

R-13. Summer Meeting of the Canadian Technical Section, June 21-22, 1922. Pulp and Paper, xx, 543-544, (June 29, 1922). Brief account of the meeting held at Iroquois Falls, Ont.—A. P. -C.

R-14 Second National "Book Congress," Paris, June 1921. Papier, xxiv, 267-271, (June 1921). Brief account of the convention of all the industries which contribute towards the making and selling of books-paper makers, printers, binders, book sellers, etc.,- and also of authors, held in Paris 13 to 19 ,1921.—A. P. -C.

R-O. The Seven-Phased Standardization of Paper. R. E. RINDFUSZ, American Writing Paper Co. **Paper Mill**, xlv, No. 23, 28, 42, (June 17, 1922); **Paper Trade J.**, lxxv, No. 4, 32, 34, (July 27, 1922); **Pulp and Paper**, xx, 643-645, (Aug. 3, 1922); **Paper**, xxx, No. 22, 11-13, (Aug. 2, 1922. Standardization in the paper industry has a seven fold application: raw materials, process, product, line (grade standardixation), distribution, prices and uses. The meaning and advantages of each of them are briefly outlined. —A. P. -C.

R-O. Co-Operative Competition and the Service Assoociations. T. J. BURKE. **Pulp and Paper.**, xx, 607-608, (July 20, 1922); A discussion of the necessity of close co-operation between the four service associations (Technical, Superintendent's, Salesmen's, and Cost) affiliated with the American Paper and Pulp Association.—A. P. -C.

R-0 Observations from a Trip to the United States and Canada in the Fall of 1920. A. BYWELL. **Svensk Pappers-Tid.**, xxiv, 87-91, è1921); **Chem. Abs.**, xv, 1992-1993, (June 20, 1921). All the stages from logs to paper as done in the United States and Canada are described and compared with similar processes in Sweden. Even labor conditions, wages and housing of employees are considered in detail. — A.P.-C.

E-2 Adhesive from Sulphite Waste Liquor. H. P. KAUFMANN. Ger. patent 353,570. Addition to Ger. patent 352,138. In the process described in the original patent, lime may be replaced by an equivalent amount of other alkaline earth oxides or by magnesium oxide or hydroxide. — I.G.

UNITED STATES NOTES

The Tidewater Paper Mills Company, Bush Terminal, Brooklyn, was sold last week by the New York Times Company to the Tidewater Paper Mills Sales Corporation. The officers of the new corporation are: John D. Coffin, President; C. T. Rue, Vice-President; F. W. Westlake, Treasurer and E. S. Pincott, Secretary. They constitute the new board of directors along with Louis Calder, President of Perkins-Goodwin Company and John H. A. Acer, of Montreal, who is chairman of the board. The Manhattan office of the corporation is at 33 West Forty-second street.

Speaking at the waste session of the Sixth New York State Industrial Conference last week, L. W. Wallace, secretary of the Federated American Engineers, declared that the twelve-hour work day and the seven-day week are wasteful industrial habits. A large part of American industry is afflicted with this evil, said Mr. Wallace.

David Van Schaak, a director of the Aetna Casualty and Surety Company, Hartford, Conn., cited statistics at the closing session of the conference, showing that industrial accidents can be prevented. Elimination of accidents in industry, he asserted, is desirable, not only from a humanitarian viewpoint and the indirect economic value, but as affecting direct and huge financial savings. Asserting that accident prevention work must be an essential part of each business, Mr. Van Schaak indicated two factors necessary for the proper operation of safety work. These are mechanical and engineering improvements and safety organization and the education of the personnel.

A conference of timber owners, Government officials and forestry experts was hurriedly called together at Portland, Ore., last week to discuss measures to be taken to combat the dreaded white pine "blister rust" which, despite all precautions, has finally reached the great forests of the Northwest. Originally introduced into the Northeastern States from Europe by importation of diseased white pine trees, the disease has ravaged the forests of New England, New York, Pennsylvania, Wisconsin, Minnesota and Michigan. Strict quarantine measures prohibiting the shipment of any white pines or currants or gooseberries—hosts of the rust germ — from the Mississippi valley and the East to the Western States have proved unavailing. The National Lumber Manufacturers' Association says that the presence of the disease in the Northwestern forests menaces timber worth $228,000,000 on the stump, and five or six times as much to the tributary population which lives off the lumbering industry. The whole future of lumbering and its dependent industries, the Northwest's greatest industries, are threatened and pending plans for reforestation are imperiled.

Arrangements have been completed for the National Exposition of Power and Mechanical Engineering at the Grand Central Palace, New York City. The exhibition will open at 1 p.m. on Thursday, Dec. 7, and will continue to December 13 with the exception of the intervening Sunday. While the fundamental purpose of the exposition is to bring together exhibits of various manufactures of power and mechanical equipment so that engineers and executives may have an opportunity of becoming acquainted with the latest devices the advisory committee has also kept clearly in mind the need for a greater understanding of the importance of power and the need for the conservation of the resources used in power development.

Immediately preceeding the opening of the Power and Mechanical Engineering Exposition the American Society of Mechanical Engineers will hold its annual meeting at the Engineering Societies Building in New York. This meeting, scheduled for December 4 to 7, has been planned as the biggest in the society's history, and is expected to attract leaders in engineering, education, economics and various fields of the technology, from every section of the country. Nine professional divisions will contribute sessions on aeronautics, managements, power, materials handling, forest products, ordnance, machine shop, railroads and fuel. A session on standardization will hear a discussion on "The Paper and Printing Machinery Standardization Program," by W. J. Eynon, Chairman on Standardization of the United Typothetae of America. C. Harold Berry and C. F. Hirshfield of Detroit, will speak at this session.

By order of the Superior Court of Connecticut, the property formerly of the Ironsides Board Corporation, producer of Uncas Board, will be offered for sale at a public auction to be held on the premises of the company, Norwich, Connecticut, December 4. The property, according to a notice advertised by Gilbert S. Raymond, representing a receivers committee, comprises paper mills, warehouses, oil tank, water tank, eight tenement houses with fourteen tenements and a manager's residence. The land has a frontage of over 1,400 feet on the Thames River with wharf accessible for steamers plying between Norwich and New York, and for vessels carrying coal, oil, and materials for the mill.

The Louisiana Celotex Company has made an announcement to the effect that it will shortly begin work on a $1,000,000 extension. This will double the present investment and triple the output. It makes building and paper board from bagasse, which is the refuse left over from sugar cane after the juice is removed.

The United States Forest Service, not content with such modern fire spying and reporting equipment as airplanes and radio equipment, has been experimenting with carrier pigeons. Recently, in an Idaho forest, a carrier pigeon was taken by a pack horse over mountains, kept at its destination over night and released the next day. It was subsequently found that it took that pigeon exactly thirty minutes to cover the eighteen miles to its home coop. In another recent test, the pigeon was sent to headquarters with a message asking fire fighting assistance. Soon after, however, it was found that the fire was under control. Word was sent by a second bird that the requested assistance would not be required, and it reached the central camp just in time to arrest action.

Common sense Says:—It's better to have glasses over your eyes that you can see through — than to have a pair of glass eyes you can't see with at all.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, November 28. — There is still a little slackness in business compared with the previous month or five weeks, but the general condition of the paper trade is fairly good. As the Christmas season approaches we may naturally expeect a spurt, because although considerable quantities of paper have already been ordered, yet there are bound to be some demands of a more immediate character. The reports from the mills show that in some lines there is considerably more activity than in others; for instance in the finer papers, the medium grades are in much heavier demand than the higher grades. Generally speaking, prices are holding very firm, and this can hardly be otherwise in view of the cost of most raw materials. Indications are that this cost will remain on the present level, any alterations being in an upward direction.

The newsprint situation is without change. All evidence points to a sustained demand for the next few months at any rate. The export figures for the seven months of the fiscal year show the activity in this department, there being an increase of 3,245,514 cwts, with however, only an increase of $1,913,727 in value.

In the other paper sections, business shows only a small change. The call for boxboards is still very good, the manufacturers of the boxes finding trade quite brisk. Waste paper keeps up very well, with a slightly easier tendency, while rags command a steady sale.

The feature of the pulp market is the continued buoyancy of ground wood. Reports from all over the province are to the effect that water powers are low, restricting production. The result is that some companies are compelled to seek outside sources of supply, and this condition, combined with a similar one across the border, is enlarging the demand and stiffening prices. It looks indeed as if the market will be strong during the winter. Bleached sulphite is also in good request, although perhaps not quite as urgent as during the last two or three months. Kraft is commanding a ready sale.

Reports from the St. Maurice Valley state that the companies are now fully engaged in cutting pulpwood, and large stocks will be accumulated.

In connection with the pulpwood situation and fire hazards, it is of interest to note that the Quebec Government, alive to the importance of its forest wealth, promise to take greater precautions to protect the forests from fires. The permit system is working out well, but it may have to be supplemented by other measures. Up to the present the pulp and paper companies have not given great consideration to the subject of fire hazards as related to cost of production, but the enormous destruction of their raw material may compel them to take this phase of the industry into consideration. Efforts are being made on every hand to keep down the cost of manufacture; at the same time tens of thousands of dollars' worth of raw material is destroyed by a single fire. Many of the Companies are spending considerable sums in protecting their limits, but the fact that fires are of annual occurrence indicates that either the protective system is not adopted as widely as it should be, or that legislation of a far more drastic character is needed.

TORONTO MARKETS

There was somewhat of a slacking off in the paper trade in November in Ontario according to the testimony of the jobbers but it was not unexpected for November and December are traditionally quiet months in many lines. Some jobbers report that November opened with few orders in sight but that business increased somewhat towards the middle of the month and the four weeks just closing will make a fair average showing. In some lines, of course, a good harvest is being reaped. This is notably so in connection with the stationery trade and the paper box industry. Manufacturers and distributors of stationery are very busy and box board plants are experiencing difficulty in keeping up with their orders. A larger quantity of board is being sold in Ontario than at any time since the paper trade started to come back. This is due, to a large extent, to the unprecedented prosperity of the paper box industry which has undergone splendid development and expansion during the past several months. Other consumers of board, have been placing good-sized orders and there is no indication of cessation in trade in this respect. There has been a slight falling off in the demand for book papers, bonds and writings but this slackening off in requisitions is believed to be seasonable rather than an indication of any real fall in the market. On the other hand it is believed that the medium grades of bonds and writings are due for a rise in price and that these are liable to go up at any moment. The general trend of prices in practically all lines is upward and stiff advances are looked for by the end of the year. Book paper mills are running full and manufacturers of kraft paper report a fair demand although the plants cannot be said to be running to capacity. Manufacturers of flour sacks report good business and a steady demand while the paper bag and wrapping paper trades report a fair volume of business both at the mills and by the jobbers. Tissues and toilet mills are busy, with a fair volume of orders of small dimensions, rather than the desirable car-load lots. It has been noted of late that there has been a slight increase in the volume of imports from the United States, chiefly as regards book papers, covers etc. but the influx of foreign goods has not been of sufficient bulk to affect the Canadian market. The pulp market continues strong, with an excellent demand in practically all lines and the plants all busy. Prices remain firm with no change from those quoted last week.

BAG AND PAPER STOCK.—The market in these lines remains active with some variation in prices and a good demand generally. No. 1 hard white shavings are quoted at $3.85 as against $3.90 last week and No. 1 soft white shavings are down ten cents to $3.60. No. 1 white short cuttings are up fifty cents, to $11.50 and fancy short cuttings are up half a cent, to 6 cents. Canton flannels are 10 cents: white lawns, 8½ cents and blue overall cuttings 6 cents. No. 1 scrap bagging is quoted at $20.00: No. 1 Manila rope at 6 to 6¼ and mixed strings at $22.50. There is a particularly good demand for new cotton cuttings.

NEW YORK MARKETS

New York November 25—(Special Correspondence)—All reports continue to tell of sustained activity in the paper market and of prices holding steady. There has been some slowing down of demand for certain grades of paper, which is the usual thing at just this time of the year yet most kinds of paper are wanted in even larger volume at present than heretofore, this also being due largely to the season. For example, there is less call for building papers of various description owing to the cessation of building operations caused by cold weather, and demand for box boards also has subsided to quite an extent, because the pre-holiday rush for paper boxes is very nearly over now excepting for such late orders as may come in. On the other hand, there is an increasing consumption of newsprint, and there seems little or no doubt that mills are shipping out their output of print paper just as rapidly as it is produced. Proof is not wanting that consumption of newsprint at the moment is exceeding all previous records. Taking the New York newspapers as a criterion, publishers are refusing to use beyond a certain tonnage of paper, apparently in the fear that their supply may become short. Not one but nearly all of the daily papers in this city, afternoon and well as morning, are announcing in nearly every issue that "because of lack or space" they were obliged to omit anywhere from five to twenty columns of advertising — and this in issues which in point of size are larger than publishers here have ever before put out. It is likely that it will be found at the close of the year that slightly more newsprint was produced during 1922 than was consumed but present indications are that the surplus will be small indeed.

Wrapping papers are active and are selling at firm prices. Domestic manufacturers are sold well ahead, most mills having orders booked which will keep them busy for a month or longer, despite continued heavy arrivals of paper of this kind from foreign sources, notably kraft wrapping from Sweden. Domestic No. 1 kraft wrapping paper is quoted at about 7 cents a pound f.o.b. New York and is finding a ready sale; in fact, as stated above, manufacturers in most cases are refusing to guarantee deliveries within a month's time. Tissue papers also are moving freely and at firm prices. With the pre-holiday shopping season getting well under way wrapping and tissue papers are at the height of their active period, which should last for a few weeks more.

Fine papers are in good demand and quotations exhibit much firmness. A pleasing feature of this branch of the industry is the exceedingly healthy tone prevailing. Consumers are absorbing bonds and ledgers as their requirements develop, and with general business improving steadily, there is a gradual expansion of demand for writing papers due to increased correspondence between business concerns.

The market for book paper is showing gradual improvement. Magazines and other periodicals are securing more advertising at present than in a year or so and are repeatedly adding pages to their issues, thus leading to a larger consumption of book papers. This situation gives promise of continuing well into the new year as prospects for advertising in 1923 are highly encouraging. Machine finished book paper is quoted at around 7 cents per pound f.o.b. New York and only the cheaper qualities are available at less than this price level. In fact, some grades of machine finished book are quoted up to 7.50 cents per pound.

There has been a quieting down of business in box boards. Demand for folding and corrugated box boards continues good, but those grades such as plain chip and news board used for making set-up boxes is not so active. This reflects the fact that most of the boxes intended for the Christmas season have been made and box manufacturers are now resting on their oars waiting for new business before coming in to buy additional supplies of board. Quotations on board have not changed, however. Plain chip is still quoted at $60 a ton f.o.b. New York, and filled news board at $62.50 per ton.

GROUND WOOD. — The market for mechanical pulp seems to be growing stronger day by day. There is a good demand for this commodity and consumers appear to be in urgent enough want of supplies to absorb practically all the ground wood offered at the full prices asked. The statistical position of the market is strong. Mill stocks are below an average and most producers are conserving pulp for their own use, with the result but limited amounts are available in the open market and those consumers depending on spot purchases are having no little difficulty in filling their requirements. Moreover, production is below normal, water conditions being none too favorable for grinding operations and thereby obliging manufacturers to curtail their output.

Domestic grinders are reported freely securing $37 and $38 a ton f.o.b. pulp mills for spruce ground wood for prompt shipment, and higher than these prices have been paid in some cases. Imported ground wood is quoted at $40 to $41 per ton ex dock New York and importers say the stiff prices demanded by Scandinavian producers make it necessary that they get at least $40 on the dock to realize a profit on importations.

CHEMICAL PULP. — There is decidedly less demand for chemical wood pulp. Paper manufacturers have let up in their buying to a pronounced degree, the reasons put forth for this being that requirements have been provided for over the next few weeks by recent purchases, the desire to keep stocks down with the inventory period approaching, and the heavy imports of pulp from Europe lately — the larger part of which, it is said, has been sold on contract and thus increasing the immediate supplies of paper mills. Quotations thus far have not undergone any definite changes. There is an easier tone to prices but sellers are maintaining their asking figures and contend that the slower demand will have no bad effect on prices because most of the supply to become available during the next couple of months has been sold. At the same time indications are that consumers are picking up small lots of pulp here and there at slight recessions in price, setters apparently being willing to let go of holdings at special prices to move certain accumulations.

Bleached sulphite is still quoted at about 5 cents a pound at pulp mills for No. 1 domestic pulp, and between 4.50 and 4.75 cents for No. 1 imported bleached sulphite. Kraft is quoted at around 3 cents ex dock for Scandinavian, and from this figure up to 3.25 cents at pulp mills for No. 1 domestic kraft. Unbleached sulphite is quoted at about 2.85 to 3 cents for No. 1 pulp of both foreign and domestic origin.

RAGS. — Generally speaking, the market for papermaking rags is quiet and characterized by an easy undertone. However, certain grades are moving freely and at firm prices. New cuttings especially are steady, this being due just as much to factors at the selling end as to demand from paper mills. Dealers say that the sharp rise in raw cotton has so advanced prices of cotton piece goods that clothing manufacturers are of the opinion they should receive proportionate increases in price for their cuttings, thereby obliging collectors to pay higher figures for rags. This in turn causes dealers to be less anxious to sell stocks on hand unless at the prices asked because of difficulty in replacing these rags at any cheaper rates.

On the other hand, roofing rags and other old cotton rags are in small demand from consumers and are gradually moving down in price. No. 1 roofing is available at $1 a hundred pounds f.o.b. New York, and No. 2 packing at 90 cents a hundred pounds, same basis, with the probabilities favoring buyers getting some supply at even lower figures; in fact, it is stated that one of the New York State felt paper mills is buying No. 2 roofing rags at 95 cents delivered or at less than 85 cents at dealers' shipping paints. White shirt cuttings are firm at around 11.50 cents per pound New York for No. 1 packing, washables are quoted at 4.50 cents New York, unbleached muslins at 10.50 cents, and new light silesias at 7.75 cents.

PAPER STOCK. — The market for old paper has displayed a steadier tone this week than in some time. There has been a little improvement in demand, particularly from the Middle West, and while prices have not advanced, they have steadied, the downtrend which lasted for about three weeks having been checked. Old folded newspapers are selling at around $1 a hundred pounds f.o.b. New York, and No. 1 mixed papers at 85 cents a hundred pounds. Western board mills have placed some fair-sized orders here for these grades at about these prices. White shavings are quoted at 4.25 cents a pound New York for No. 1 hard, and 3.60 cents for No. 1 soft shavings, and old magazines are bringing about 2.50 cents for No. 1 heavy flat stock. Old kraft paper is available at 2 cents per pound, and No. 1 print manilas of ordinary quality at 1.60 cents.

OLD ROPE AND BAGGING. — Reports tell of a fairly steady call for old manila rope from paper manufacturers, and domestic rope is selling at about 6 cents per pound at dealers' shipping points with now and then a transaction reported at a quarter of a cent per pound under this level. Mixed strings are in routine movement at an average of 85 cents a hundred pounds New York for carload lots. Old bagging is quiet though tissue paper mills are absorbing some supply of No. 1 light scrap bagging at about 1.25 cents per pound. Roofing bagging is neglected and offerings by dealers at 75 cents a hundred pounds New York seldom elicit response from consumers.

At the annual re-union of the engineering Alumni of the University of Toronto held a few days ago in Toronto, reforestation, particularly with regard to the various woods for trade, was strongly urged in a resolution which also urged the raising of an industrial research foundation of $10,000,000 by the people of Ontario through subscription, assisted by the Ontario Government for the development and exploitation of the natural resources.

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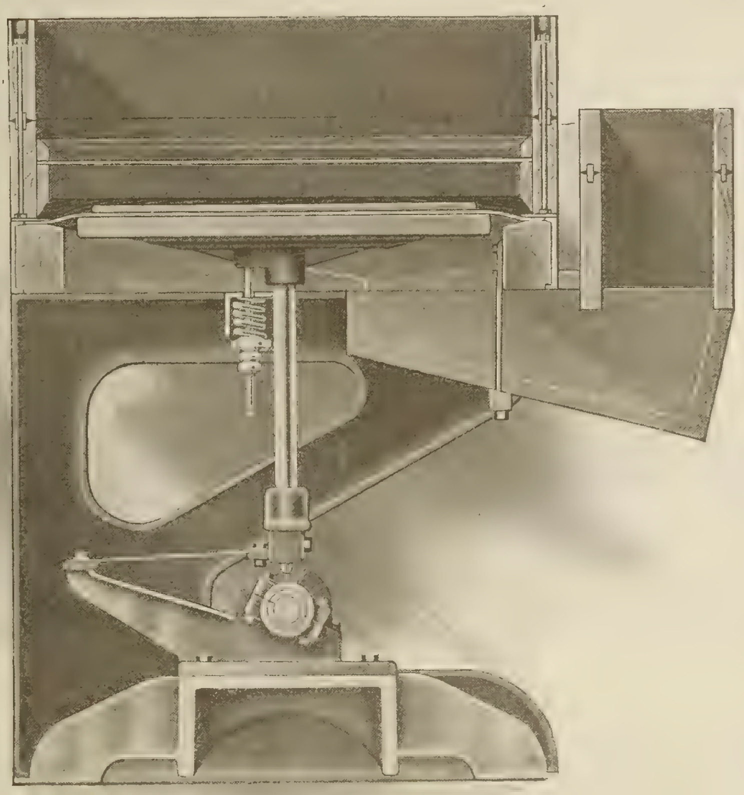

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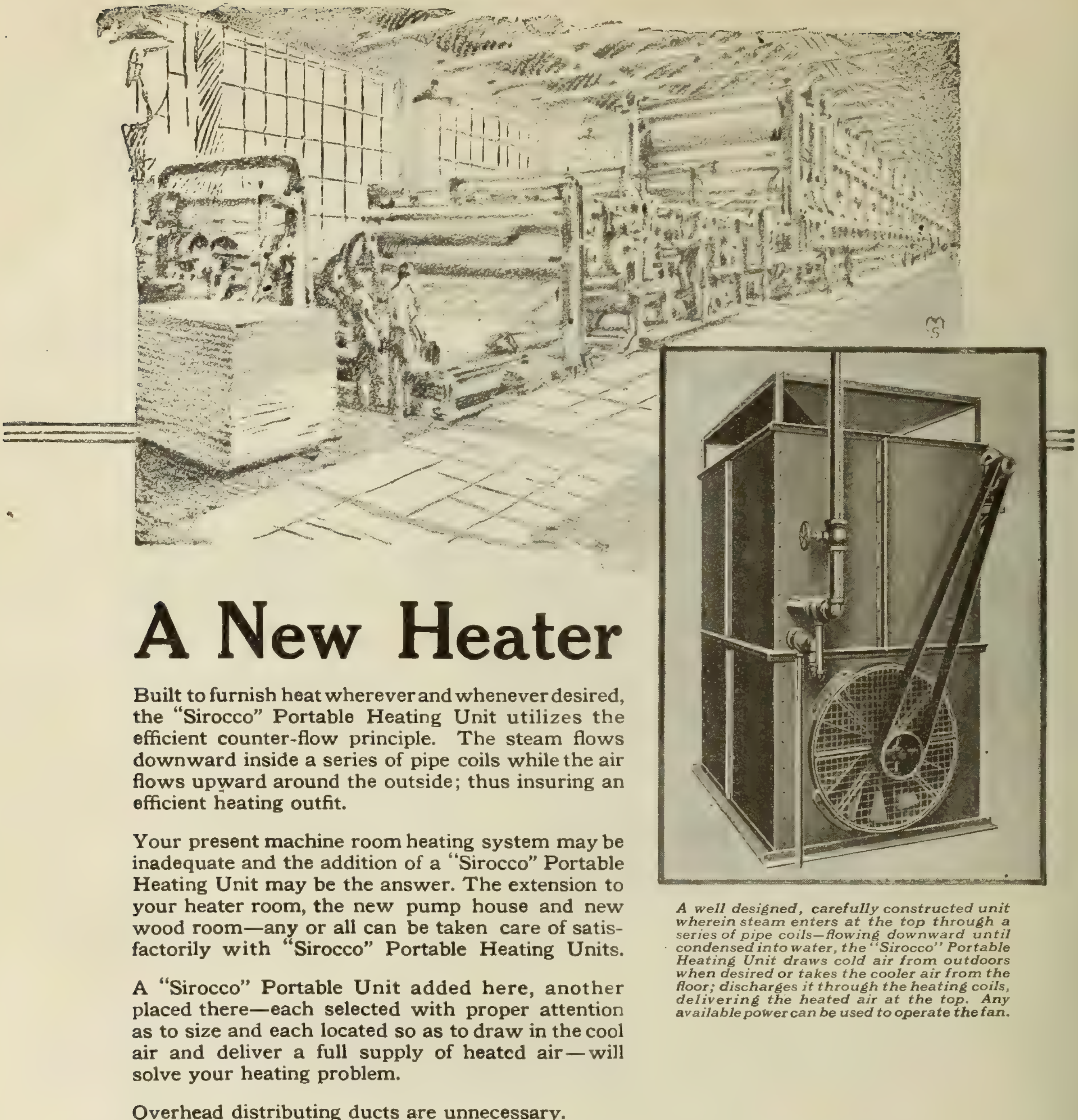


A well designed, carefully constructed unit wherein steam enters at the top through a series of pipe coils—flowing downward until condensed into water, the "Sirocco" Portable Heating Unit draws cold air from outdoors when desired or takes the cooler air from the floor; discharges it through the heating coils, delivering the heated air at the top. Any available power can be used to operate the fan.

A New Heater

Built to furnish heat wherever and whenever desired, the "Sirocco" Portable Heating Unit utilizes the efficient counter-flow principle. The steam flows downward inside a series of pipe coils while the air flows upward around the outside; thus insuring an efficient heating outfit.

Your present machine room heating system may be inadequate and the addition of a "Sirocco" Portable Heating Unit may be the answer. The extension to your heater room, the new pump house and new wood room—any or all can be taken care of satisfactorily with "Sirocco" Portable Heating Units.

A "Sirocco" Portable Unit added here, another placed there—each selected with proper attention as to size and each located so as to draw in the cool air and deliver a full supply of heated air—will solve your heating problem.

Overhead distributing ducts are unnecessary.

The "Sirocco" Unit *operates with a minimum of power;* occupies a *minimum amount of space* and delivers a *maximum amount of heat.*

Our engineers will be glad to assist in selecting the proper "Sirocco" Products for your service.

CANADIAN SIROCCO CO., LTD., WINDSOR, ONT.
BRANCH OFFICES IN ALL PRINCIPAL CITIES

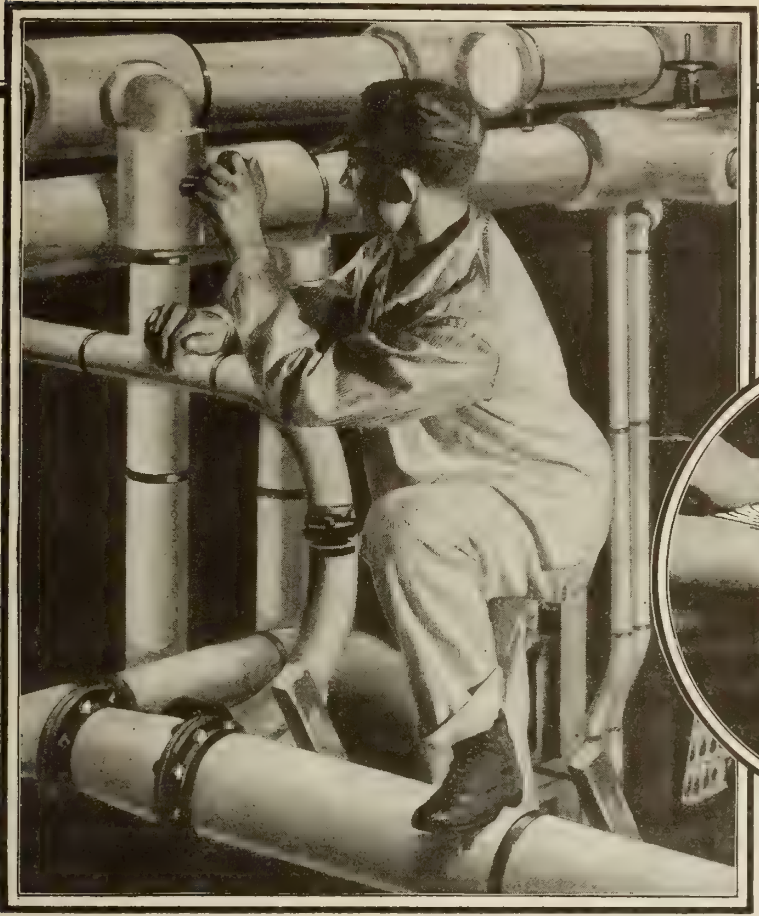
(165)

"Sirocco" Products

TRADE MARK

BLOWERS · EXHAUSTERS · VENTILATING
FANS · AIR WASHERS · ENGINES

**FOR HEATING, VENTILATING, DRYING,
AIR CONDITIONING, MECHANICAL DRAFT**



Johns-Manville Asbesto-Sponge Felted Insulation. In a test of 26 insulations at the University of Wisconsin, this laminated construction showed the highest efficiency.

You can hit Asbesto-Sponge Insulation with a hammer—an important test for engineers who are interested in how well an insulation will stand up in service.

The most efficient pipe insulation is also the strongest

A thermally efficient pipe insulation fails unless it has the physical strength to maintain its efficiency under the wear and tear it will get in the average plant. It is bound to lose its efficiency if it cracks or pulverizes under shocks and vibration.

Both strength and efficiency must be combined to produce a good insulation. Hence the importance of the fact that Johns-Manville Asbesto-Sponge Felted Insulation is not only the most efficient but also the strongest pipe insulation on the market

Impartial tests have repeatedly proved the greater efficiency of Asbesto-Sponge. You can test its physical strength yourself—with a hammer. It has both efficiency and the strength to maintain it.

That is why Asbesto-Sponge is most economical. Send for a booklet.

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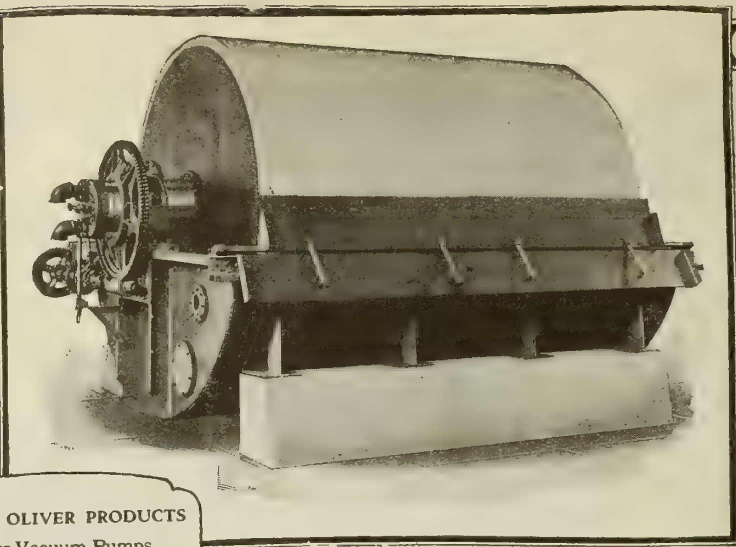

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in the Modern
PAPER MILL

Repeated successes in many modern paper mills have proven the worth of the Oliver Continuous Filter in four important processes

Brown Stock Washing Weak liquor and hot water washes are applied evenly to each particle of a thin cake of pulp. High vacuum removes liquor continuously from the cake preventing diffusion or mixing of wash water and liquor. Soda losses are decreased and dilution of liquor reduced to a minimum.

Caustic Recovery Cake of uniform moisture content is continuously delivered at an exact and non-varying rate. Caustic losses are cut in half, labor is saved, floor space is economized, and washing is efficiently performed by displacement rather than dilution.

Thickening Before Bleaching Felt costs alone per ton on wet machines exceed total cost of operating Olivers. Output of one Oliver operator is equivalent to that of six wet machine tenders.

Decking As a decker and save-all the Oliver removes all fibre and filler from the waste water.

Complete details on any of these processes will be gladly furnished by

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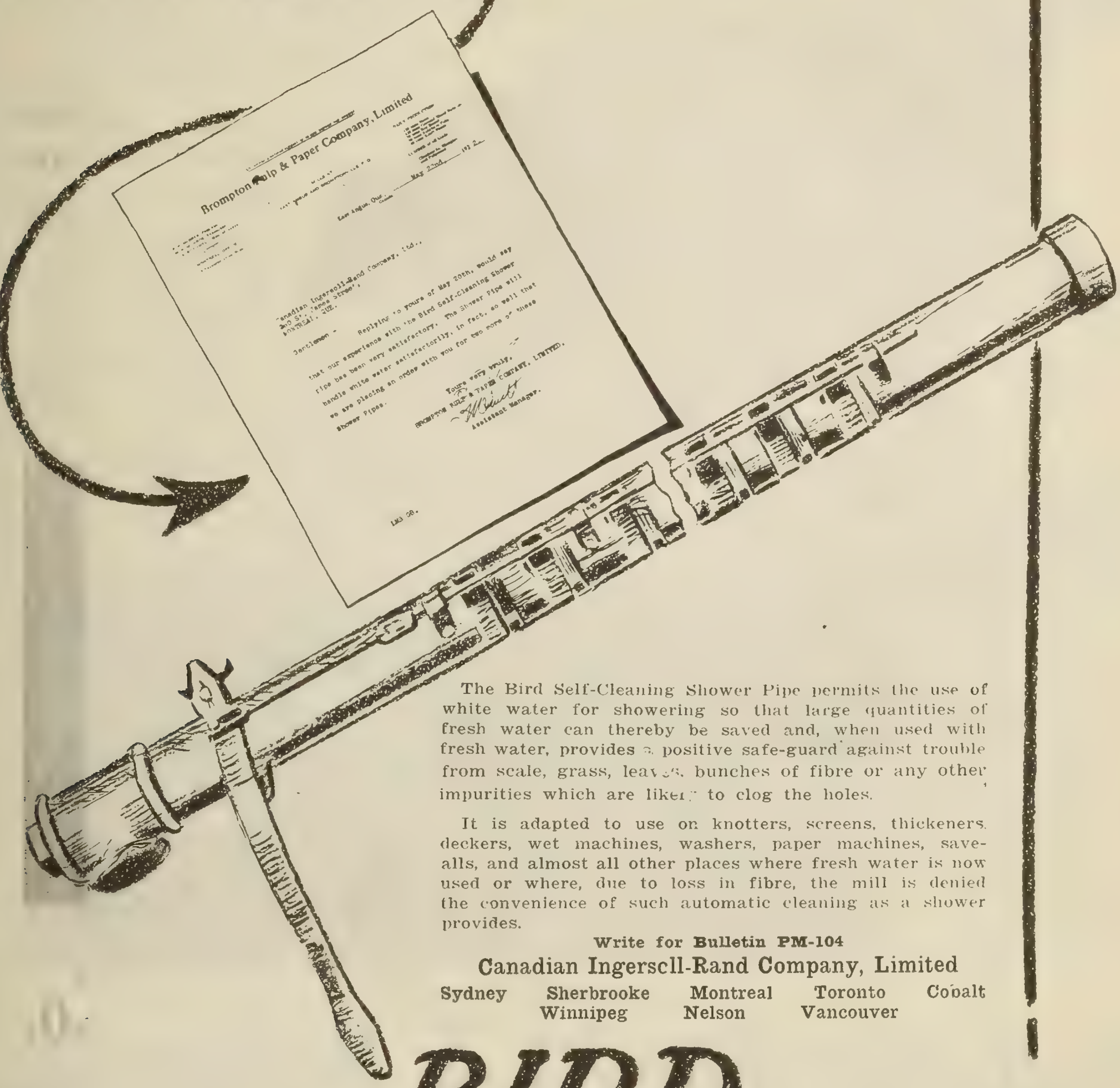
The BIRD self-cleaning shower pipe is very satisfactory



Brompton Pulp & Paper Company, Limited

East Angus, Que. May 22nd, 1922.

Canadian Ingersoll-Rand Company, Ltd.,
2[illegible]0 St. James Street,
MONTREAL, QUE.

Gentlemen: - Replying to yours of May 20th, would say that our experience with the Bird Self-Cleaning Shower Pipe has been very satisfactory. The Shower Pipe will handle white water satisfactorily, in fact, so well that we are placing an order with you for two more of these Shower Pipes.

Yours very truly,
BROMPTON PULP & PAPER COMPANY, LIMITED.
Assistant Manager.

LMB GB.

The Bird Self-Cleaning Shower Pipe permits the use of white water for showering so that large quantities of fresh water can thereby be saved and, when used with fresh water, provides a positive safe-guard against trouble from scale, grass, leaves, bunches of fibre or any other impurities which are likely to clog the holes.

It is adapted to use on knotters, screens, thickeners, deckers, wet machines, washers, paper machines, save-alls, and almost all other places where fresh water is now used or where, due to loss in fibre, the mill is denied the convenience of such automatic cleaning as a shower provides.

Write for Bulletin PM-104

Canadian Ingersoll-Rand Company, Limited
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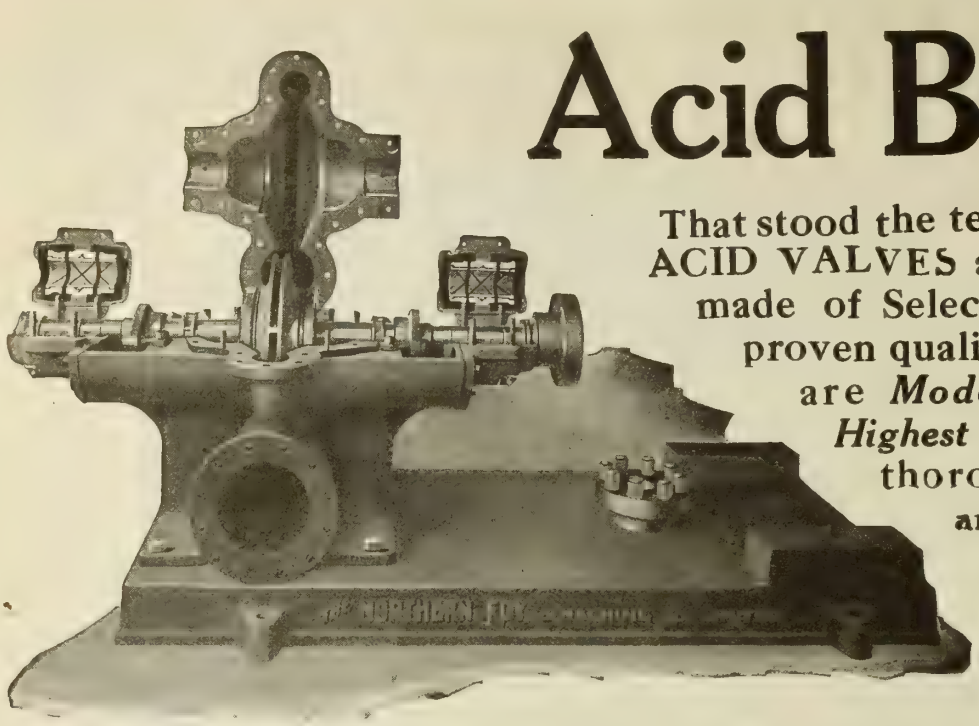
BIRD
Self-Cleaning Shower Pipes



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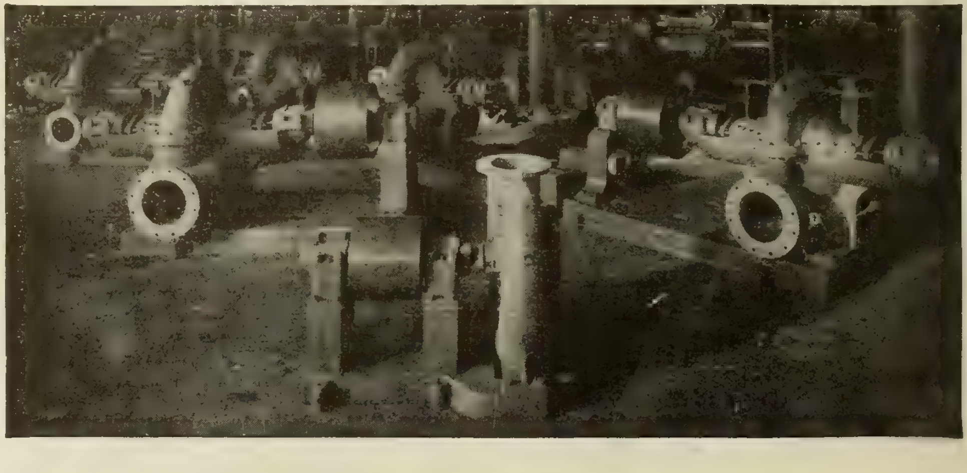
That stood the test of time. Our ACID VALVES and PUMPS are made of Selected material of proven quality. Our Pumps are *Modern* in design *Highest in* Efficiency—thoroughly reliable and we have proven beyond question by numerous tests at the works and actual operation under hard Continuous Service in the field that our pumps are all that we claim for them.

We protect our customers by testing all pumps before shipping.

Get a list of installations and satisfied customers. They are numerous



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Bearings only subject to mechanical wear

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Quick Detachable Plates.

Capacity up to 50 tons

Less than 1 h.p. per Machine

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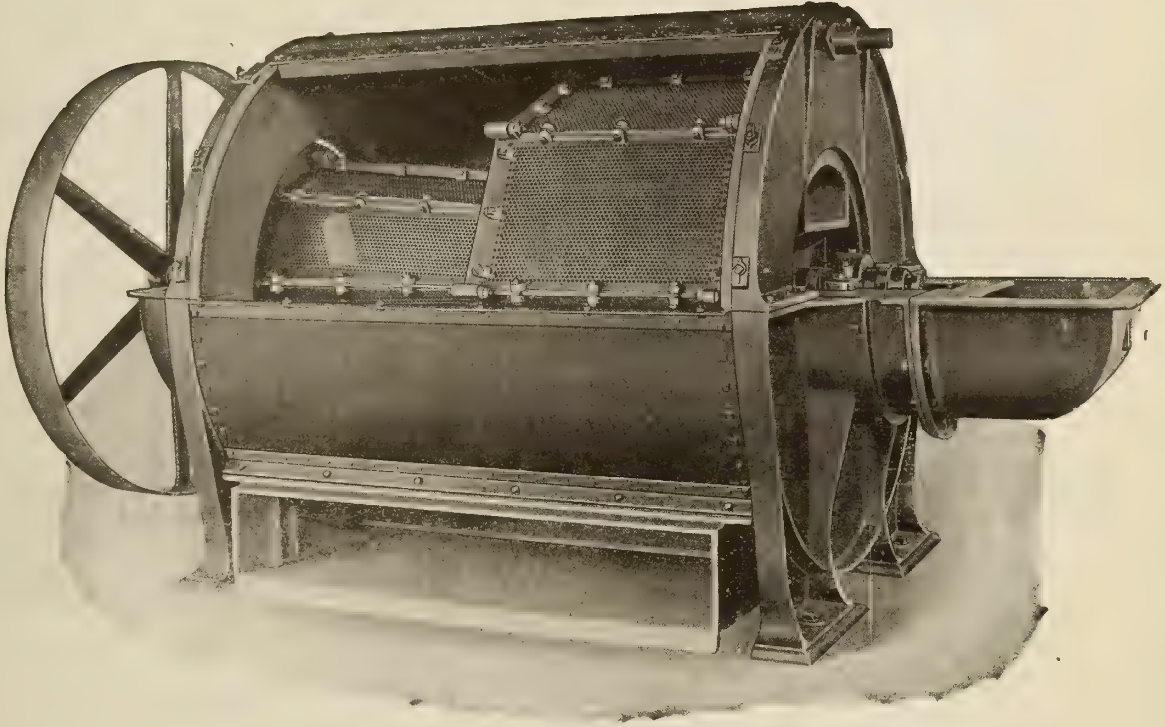

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Very Large Capacity
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PULP and PAPER MAKER'S FELTS

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Capacity easily taking care of very important Canadian customers' requirements — and shipments to the other Paper Making Countries.

The success and reputation of "Ayers Felts" bears evidence of the Quality and Dependability built into them. Construction features evolved for all kinds of machines, for all classes of paper, to give maximum efficiency with regard to the particular manufacturing problems in the various mills.

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WASHED
WITHOUT
SHUTTING DOWN
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The Patented "Ayers" **FELT WASHER** attains this ideal for which paper makers have long been striving. **By the means of this device, the work of cleaning and washing the Felts is done without stoppage of the machinery and, in the case of news print or similar paper, without breaking or crushing the sheet.**

PATENTED IN U.S.A., CANADA AND EUROPEAN COUNTRIES.
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Privilege to install this FELT WASHER readily granted by AYERS LIMITED to all its customers on most reasonable terms.

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Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Iroquois Falls. Metagami, Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie, Dryden and Fort Frances.

Ontario is traversed east and west by three great transcontinental railways, affording excellent transportation facilities.

Ontario's natural resources of mineral, pulpwood, timber and water powers are unequalled in the Dominion of Canada.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries, apply to—

Hon. Beniah Bowman,
MINISTER OF LAND AND FORESTS
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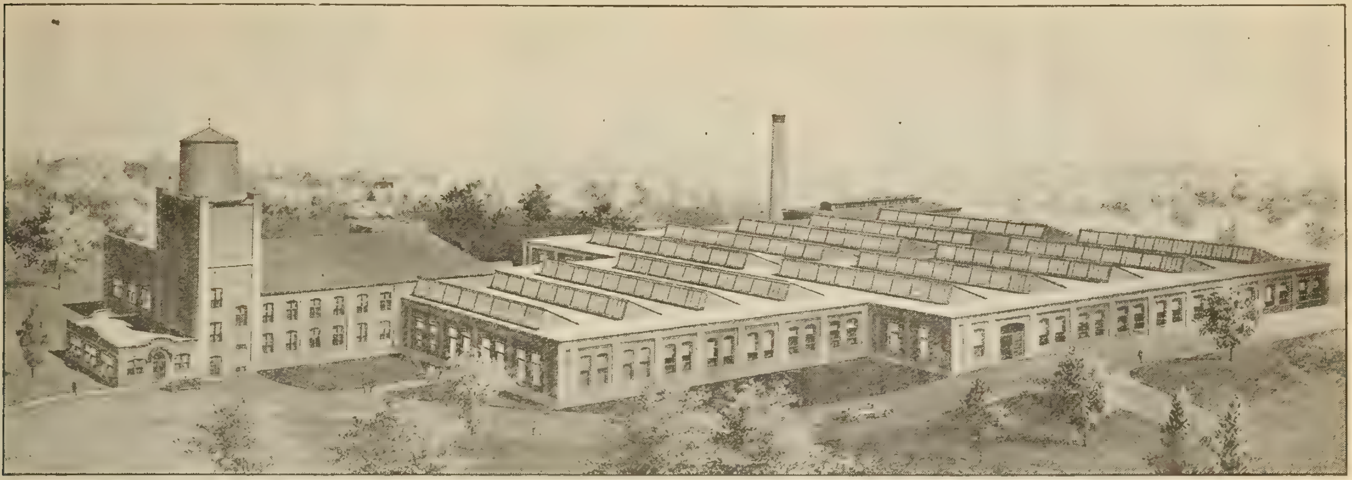

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have qualities of sustained openness that are of real importance in keeping costs at a low level.

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Kenwood Felts, Kenwood Seamless Felts and Kenwood Tan Jackets.

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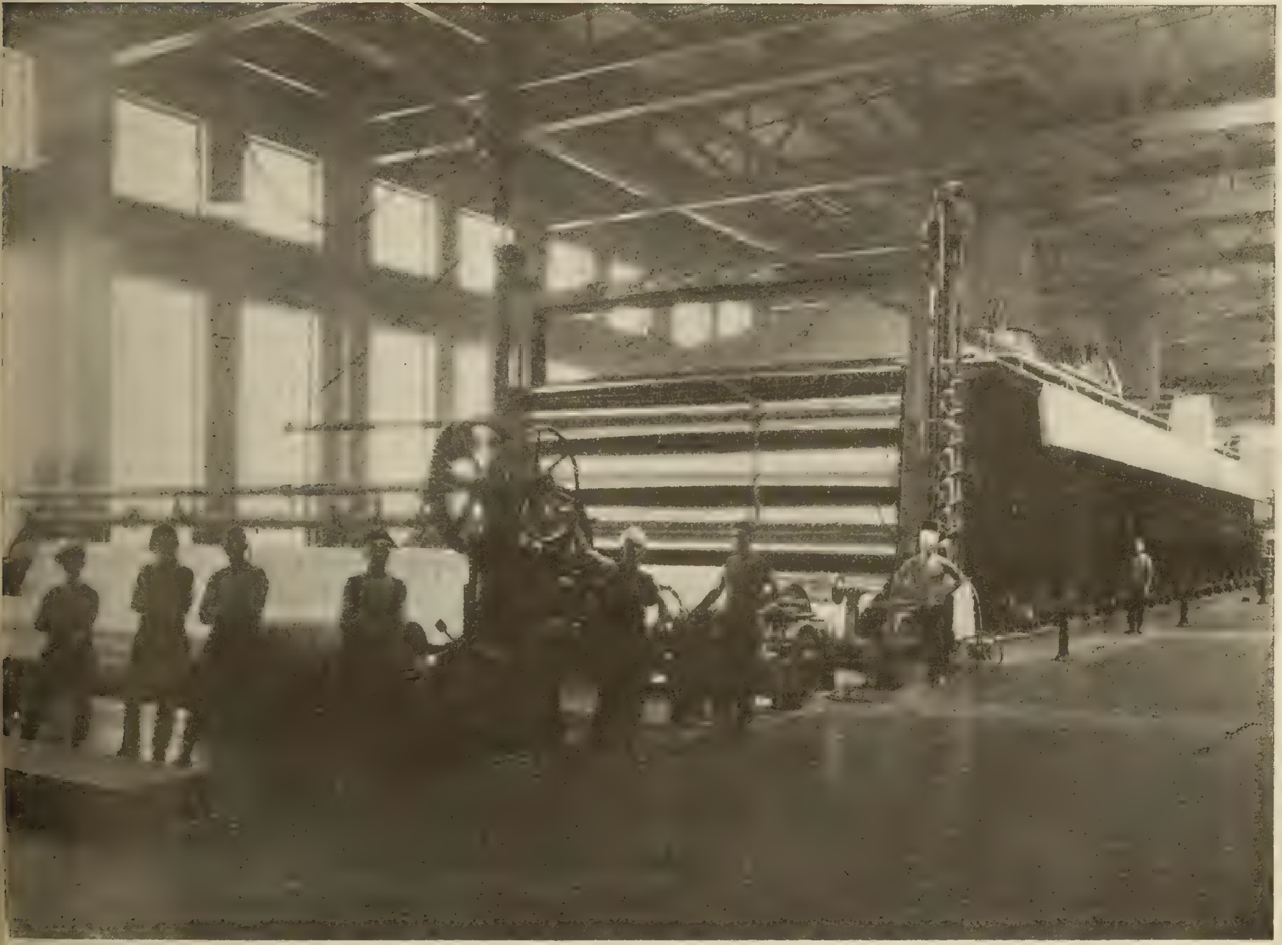

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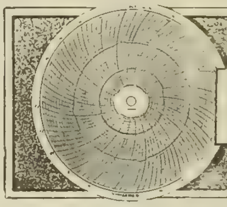

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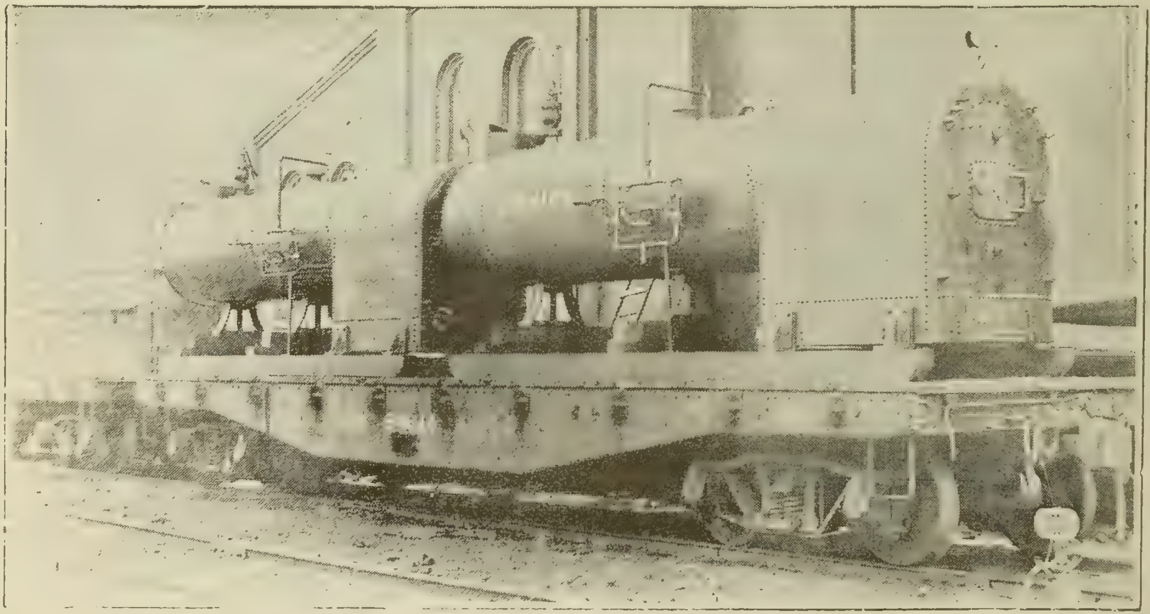

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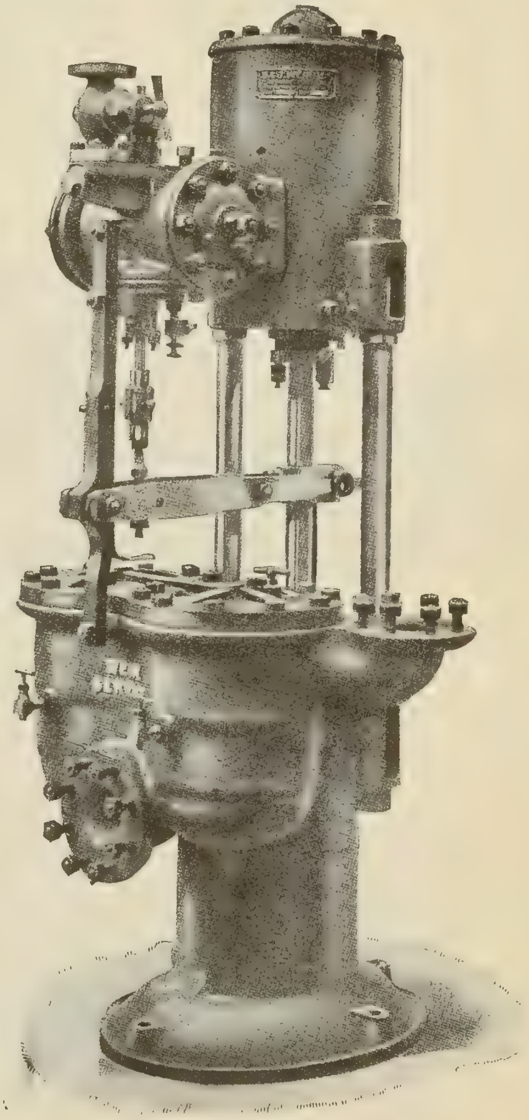

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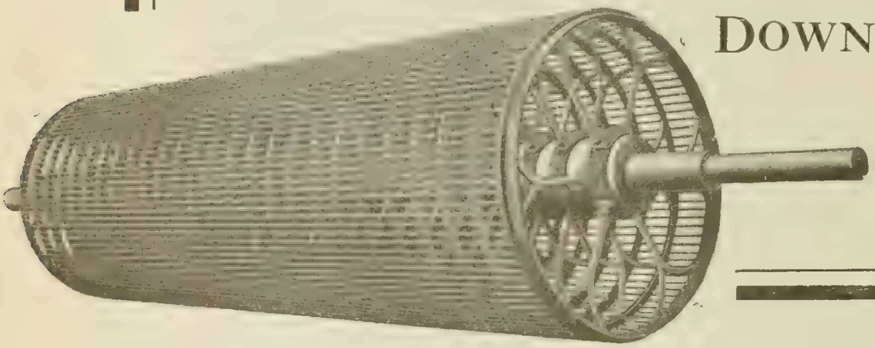

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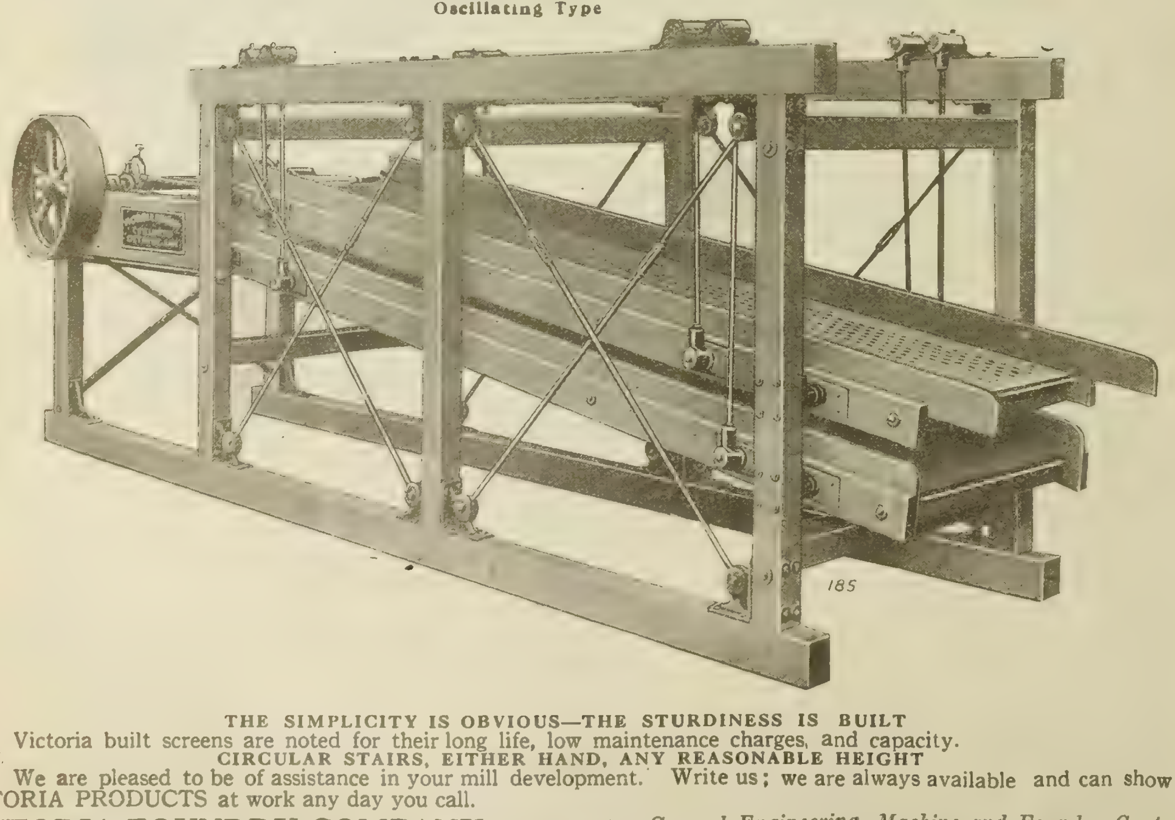

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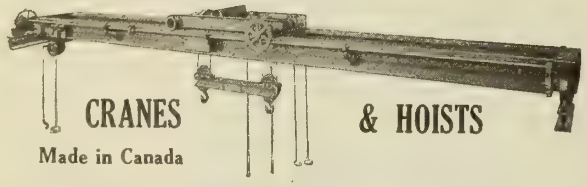

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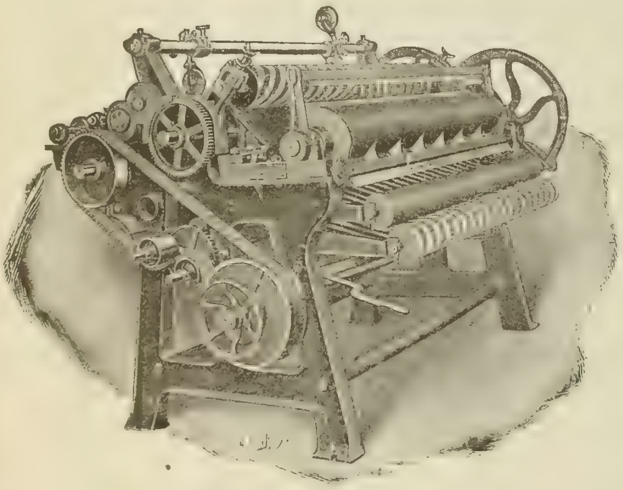

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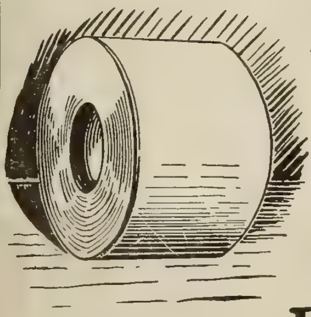

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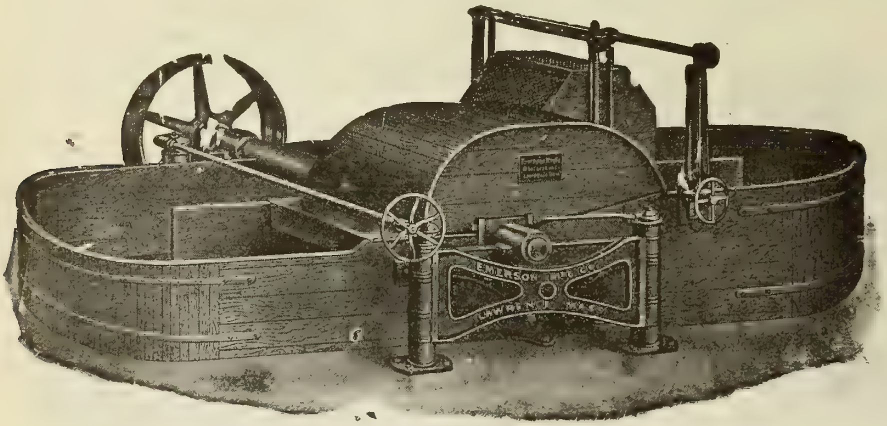

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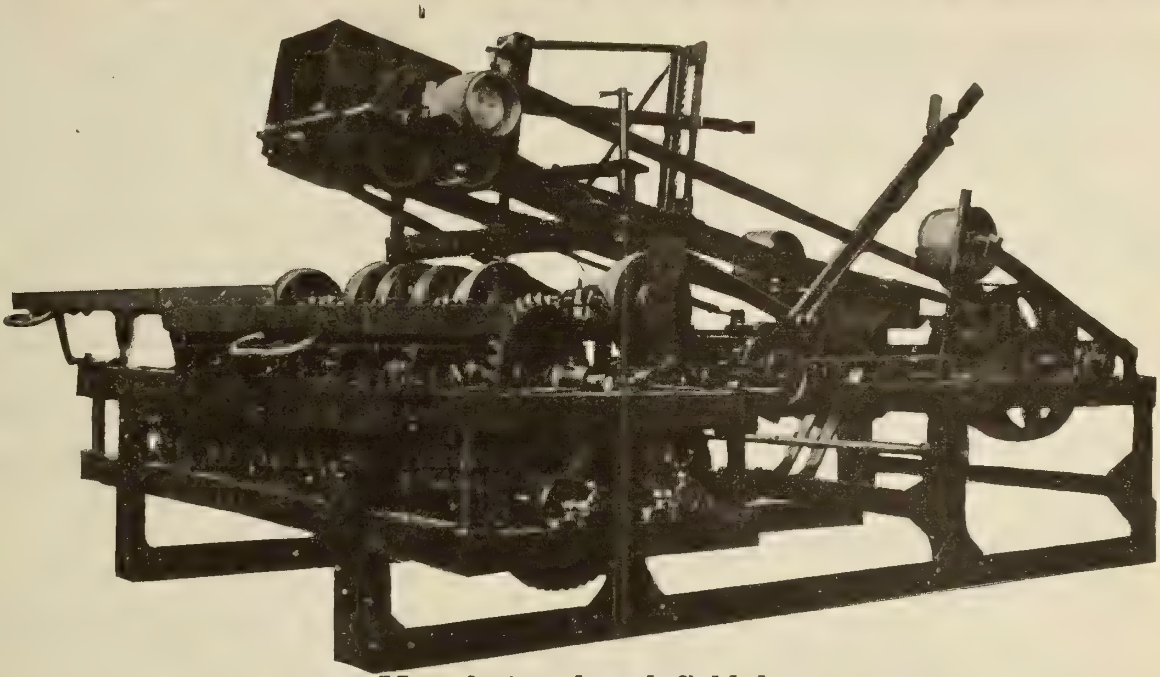

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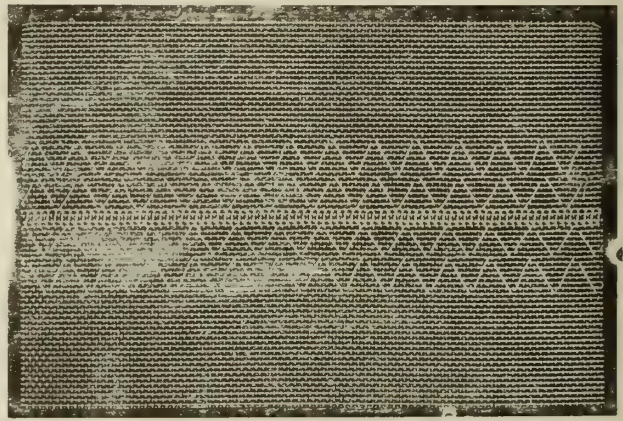

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XX. GARDENVALE, December 7, 1922 No. 49

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-:- EDITORIAL -:-

AN EIGHTEEN MILLION DOLLAR MILL

Announcement is made, on another page, of the formation of a company to develop hydro-electric power on the Humber River in Newfoundland and establish there a pulp and paper plant. The whole proposition is to cost in the neighborhood of $18,000,000. The report says the British Government will guarantee the interest on $9,000,000 and the Newfoundland Government a similar amount. It seems to us that this is rather a large undertaking for the colony, in view of the apparent financial difficulties already existing there. These are largely due, it is understood, because of the unprofitable condition existing with regard to the railway system on the island. This very situation, however, may be a factor in the new development and an argument for government participation in it, for among the applications of the power is the possibility of electrification, at least in part, of the Reid-Newfoundland Railway, which now operates on expensive coal, brought from Cape Breton.

The proposed site for the huge new plant is on the lower reaches of the Humber River, near where it flows into the Bay of Islands. Ocean going vessels can go part way up the river, where docking facilities can easily be provided. This point is on the west coast of the island, on the Gulf of St. Lawrence, where it meets the Straits of Belle Isle. Until July or August, vessels take the southern course, through the Gulf, to England. Later, when the ice flow has diminished, the Straits route can be used, which brings the new mill less than 2,100 miles from Liverpool. We have no definite information on the length of the shipping season from the Humber, but it is only about 100 miles north of Port aux Basques, which is on the open water of the Gulf.

The famous mills of the Anglo-Newfoundland Co., established by the late Lord Northcliffe at a cost of some $7,000,000, at Grand Falls, are about 100 miles east of the Bay of Islands. Proponents of the new scheme have referred to the Northcliffe mills as an example of a successful undertaking, which they hope to equal or surpass.

The Humber River is the largest stream on the West side of the island, but that is not saying how big it is. The main river flows southwest, nearly, and about half way of its length it receives water from a rather extensive lake system to the south of the juncture. This puts practically all the west side of the island on this watershed, which probably has about all the timber not tributary to Grand Falls, or the southern or eastern coasts. Above the Humber River basin, a long narrow promontory runs north to Labrador, and, from statements of friends who have passed that way, this part of the island is bleak and bare. This, apparently, does not leave any too much wood, assuming growth as good as on Cape Breton, for a newsprint mill to make 100,000 tons a year. Possibly supplementary timber limits in Labrador are to be provided, but that is some distance off.

The reports that so far have come to our notice do not state the amount, size nor availability of the pulpwood supply, nor do they state the minimum flow, or variation in flow, of the Humber River. This variation must be fairly large, and may necessitate the installation of excess grinder capacity to make extra groundwood in summer to carry the mill over the winter low water period. It is not for us, however, to presume any knowledge of these engineering features.

As for the market, no doubt the promoters of the proposition have thoroughly canvassed that situation. It is essentially a British affair. Norway and Sweden are, apparently, near their maximum production. Further increase in consumption of newsprint in England will doubtless inspire extension of the paper industry in Finland, which has large areas of undeveloped timber. That seems to be where the new mill will meet its rival. Should competition become too keen in England, the Humber mill would be in range of United States markets and so would rub elbows with Canadian mills. The American market is now well provided for, perhaps a bit too well supplied, when our new plants are producing. British mills at home are also extending their machine capacity.

It is stated that 2,500 men will be employed in the woods to provide the mills with wood. That looks like a big crew to get out, say, 125,000 cords. It is a laudable thing to provide employment and we sincerely hope that this new development, once it is started, will be permanently successful. But we are constrained to urge and caution the promotors that Newfoundland is a long way from the people who will buy stock in the concern and any exaggerations or unfounded statements of conditions or prospects will reflect to the discredit of the whole industry and tend seriously to discourage the legitimate and proper development of which the resources of the colony are capable.

A JOB FOR TECHNICAL SECTION

In the following item we print a letter to the editor which should be considered carefully by every paper maker, and particularly by members of the Technical Section. The constitution of the section, does not, apparently, at the present time provide for membership among makers and dealers in supplies. Consequently a committee of the Technical Section *including* wire makers cannot be appointed. It is possible, however, to have a committee of the Section for the purpose of cooperating with the wire manufacturers in studying problems of mutual interest. Difficulties of this kind require the attention of minds that can properly analyze the situation in a scientific manner and weigh all the factors. The consumption of wires is a big item of expense to a pulp and paper mill. One of the main functions of the Technical Section is to help reduce expenses. This can best be done in a case of this kind by cooperative effort. Nobody expects that secrets will be openly revealed but there are fundamentals that are not yet fully understood, and these must be studied if we are to have progress.

WHY WIRES "LET GO"

Subject: Fourdrinier Wire Seams

To the Editor.

I wish it were possible that the man who uses wires, i.e., the machine tender, and the man who makes them, could be brought together at stated periods for personal discussions of wire problems of mutual interest in an endeavor to overcome some of the existing wire troubles which are perhaps avoidable and for which the wire manufacturer is usually blamed, through perhaps lack of knowledge, on the part of the user, as to what is really the cause.

As this plan is probably not feasible, I have decided to take up, through the columns of The Pulp and Paper Magazine, one very important question for consideration, which I trust will be the means of opening up other troublesome questions for discussion and I am sure that The Pulp and Paper Magazine will be glad to co-operate in these get-together, heart to heart talks and in this way assist the Wire Manufacturer in giving 100 per cent service by comparing experiences which are often unpleasant and which may be overcome by sensible co-operation.

In my opinion the most serious problem before the wire manufacturers to-day, is the question of "Seams" and they are all experimenting and working along lines of research, in an effort to fabricate a wire seam which will meet the various demands made upon it and also give satisfactory service under all the exacting conditions required of it.

I am very emphatic when I make the statement that all wire manufacturers are fabricating seams which are mechanically perfect and of correct construction in so far as the judgment and experience of the different manufacturers are concerned and they have no doubt used every endeavor to meet the requirements of their customers as their limited knowledge will permit.

The "Smith" Wire Company makes up a wire for The "Jones" Paper Company with their "new improved seam" and in due course they get a report that the seam was O. K. and to make them all like that in the future. Great rejoicing at the Smith Wire Company and they now know that they have solved the troublesome seam question; but listen.

They had lost the business of the Black and White Paper Company owing to seam trouble so now Smith writes that they have a new improved seam which is the "goods" and can he send along a wire under full guarantee to "stand up". — He sure can, and does but in an unexpectedly short time Black and White writes that the last seam was the worst ever as they could not get the paper over the machine and the wire is being held for your instructions. Deep gloom registered by the Smith Wire Company and another hope blasted.

The above may sound like a fairy tale but it is all too true, which illustrates a point and brings us back on the thorny path again.

As previously stated, I am sure that all wire seams are mechanically perfect but perhaps not adapted to the work required; perhaps too open for a light sheet or too close for a heavy sheet, nevertheless of proper construction. I might cite other conditions but these are sufficient to illustrate a point.

The most serious problem at the present moment is one of "seams letting go" and this gets us down to the "meat" of this article.

We have to-day, the soldered seam, the re-inforced seam, the protected seam, etc., and the latest adjunct to our happy family circle is the "Oscillating Fourdrinier Wire" and all with the intent of a single effort and that is to fabricate a seam that will not "let go" and with the information at hand and judging from existing conditions I am of the opinion that the oscillating wire is the best bet so far owing to the fact that this wire is woven out of true to overcome the feature of the wire running in a true line over the box, and thus prevent scoring which means that imperfectly woven wire apparently have an advantage over perfectly woven ones. This seems an absurdity on the face of it and so foolishly unnecessary.

Now as to the cause of why a seam "lets go" and a realization of how hopeless the efforts of the wire manufacturer are, unless they can get the hearty cooperation of the Mill Superintendent in an effort to locate and overcome the cause of this condition.

90 per cent of the "imperfect" seams which have come to the writer's notice, have "let go" owing to the fact that the seam was "scored" a condition over which the wire manufacturer has absolutely no control as this is a paper machine condition and can only be remedied there.

How many times have we heard that such and such a wire seemed to be inclined to "freeze" to the dry box. When a wire does this it is "scoring" and if not eased off, there will very soon be another seam letting go and consequent grief in the office of the wire man.

Be sure your wire is oscillating on your dry box because if it is, there is no chance for scoring but as soon as it shows signs of "freezing", give it air or plane your box and you will ease your own burdens and earn the life long gratitude of an already distracted wire man.—Dr. Buck.

NOTE. — The columns of the Pulp and Paper Magazine are wide open for the discussion of this important subject. We shall even go further, and offer to pay for acceptable articles.—Editor.

"Men Make Systems--Systems Cannot Make Men."*

By Col. B. A. FRANKLIN, Vice-Pres. Strathmore Paper Co.,

Mittineague, Mass.

There is a feeling, (and I don't know whether it is a proper feeling or not), that the cost system isn't making the headway it ought to in any manufacturing business, not even in the paper manufacturing business.

Of course, I know that feeling is an unjust one, because I talked to a gentleman recently and he accused my company of having no cost system and the reason he did was because we didn't have the kind of a cost system he believed in. But there is a feeling that cost systems are not making the headway they should.

To many of us, this seems entirely beyond understanding. There must be a reason. I remember long years ago, when I was young, (and it wasn't in the eighties, but probably in the nineties or the naughties), I came to the firm conclusion that if I was going to be a business man and make any progress, I ought to know something about a cost system. It seemed ridiculous to me to go out into the world and sell things for a certain amount of money, and then throw the orders into the factory and let the kind of people that I judged in our plant were handling affairs, endeavor, without any knowledge whatever, to make the articles at a figure which by chance might be less than they were sold for.

I came very early to the firm conclusion that if I was going to make any headway in the manufacturing business, if I was going to know what things were sold for, and if I was going to know the cost for making them, there must be a cost system. That was in a big steel plant.

I went to the cost clerk and told him I would like to know something about his cost system, and he told me where I could go, and as I look back over my long experience, and see how full of good intentions cost systems are, I have concluded that he probably directed me to the right place.

With him, the cost system was a secret, which he refused to reveal, but I had taken a mathematical course at a university and I remembered the last subject I took was geometry in the fourth dimension and there "ain't no" fourth dimension as you well know. But I concluded that while cost systems were a mystery to me at that time, if I could understand geometry of the fourth dimension, which dealt with lines and points at infinity (and I never expected to get to infinity) I could probably work up a cost system. I did. I invented a cost system. There are people who think, when they have heard something of our cost system, that it is the old original one that I invented, but it isn't. It has been improved with time and with an occasional rub against the would-be expert.

But at any rate, I did work up a cost system and I worked at it nights. As I look back upon it now, I think it was quite a wonderful cost system, because one of the things I did, was not merely to divide my expense by departments, but I divided my expense by operations. I guessed at the expense, it is true, because no one gave me the figures, but I have since discovered that many a manufacturer who could get the figures, has done the same thing, so possibly I was not so bad at that.

I put down each operation and I guessed as best I could what the expense on that operation was and I operated that cost system, and as I look back upon it now, I think it was a wonderful experience. In fact, while my subject is that systems cannot make a man, I offer you myself, gentlemen, as a man whom system has made, and if you deduct 25 pounds, I might be able to pass at that.

That was the beginning of what I think was some understanding of manufacturing and afterwards, I was even led to write a book on cost systems, but that is a very common thing now; the world is full of people who have written books, so I don't think I really ought to blame that on my original cost system investigation.

I cannot understand today why an executive, who has any comprehension of the intricacies of manufacturing, can, for a moment, have the courage to proceed without some method of advising himself constantly as to what is happening in his factory from the dollar and cents point of view, for while there are other reasons—better reasons we will admit—one of the essential reasons is that he shall make a profit. How you can make a maximum of profit by keeping the price up and not keeping the cost down, I cannot understand. How you can keep the cost down without knowing what the cost is and be able to control it, I can't understand.

So it seems to me that the cost system business is a very very fundamental business to be in, but why is it true that cost systems do not make the headway that they should? I know what is in you minds, gentlemen. Probably one of the first reasons you would give is that the executives stand in the way of the cost systems; that they are unwilling to spend money to properly support cost systems; that they are unwilling to use cost systems; that they are unwilling to understand cost systems, and there is a good deal of truth in those assertions.

We know we look up to the executive and he ought to be looked up to, but the executive, after all, works in a rut, probably like a great many of us. That is the trouble with the executive. He is so familiar, or thinks he is, with all the things around him, that he isn't essentially of an inquiring nature into all the details of the business, consequently, he doesn't take interest in a great many things that the cost system would show him. Many times the very thing that the cost would show as a wrong method, is something he, himself, put in, and he doesn't want any cost system to tell him that the things he devised are costing too much.

You will say, therefore, that the executive stands in the way. Well, now, the truth of the matter most of the time is the executive has too many things to do. He is accustomed to think of his relations with the outside world, the policies of the business, the question of wages, and a whole lot of other things which worry an executive and which he feels must be attended to immediately.

His whole day is taken up, (outside of two or three hours for lunch or an afternoon for golf occasionally), and his whole time is taken up mostly by those important things, and he hasn't the time to do the things you think he ought to do, when you are his cost clerk.

You frequently find when you approach him that you are in about the same position as the pickerel I recently heard about. I heard a chap from Detroit tell a story about this pickerel. An experimenter took a glass tank and placed a piece of plate glass in the center. In one side, he placed a pickerel and in the other he placed a lot of minnows. I am not a fisherman, but they tell me a pickerel likes minnows, so the pickerel, immediately he got his bearings, headed for those minnows and struck his nose against the glass partition. It is claimed that a fish has very little intelligence, so after the pickerel tried that four or five times, he gave it up. He argued that it was impossible for him to get one of those minnows.

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* Address given at Cost Association Banquet, Nov. 9th 1922.

Then the experimenter took out the glass partition and the pickerel didn't worry the minnows at all. The pickerel had made up his mind that it was of no use, as he had tried half a dozen times and couldn't succeed.

I wonder if a great many of you, gentlemen, in the cost business aren't pickerels. You talk to the executive along certain lines, you bring to his attention certain things which you think the cost system shows need remedying, and when you get no attention, like the pickerel, you quit the job. Possibly some of you may be like the story that this same gentleman told. It is about a Scotch collie dog and a jackass. You can take your pick when the story is over.

The jackass noted that the master seemed to care more for the collie dog than he did for him. The jackass made up his mind he was going to find out why that was so. He watched the collie dog and he noticed when his master came home, the collie dog jumped into his lap when he sat down on a bench, and the master fondled him. The jackass thought he could do the same thing; he says, "That collie pulp has nothing on me."

So the next day when the master came home and sat down on the bench, the jackass came along and jumped into the master's lap, whereupon the master pushed him off, got a club and nearly beat him to death. The jackass couldn't understand the master's discrimination between twenty pounds of collie pulp and 1200 pounds of jackass. Now that may be one of the difficulties that confront you; possibly some of you are trying to thrust 1200 pounds on the executive. What you have got to do is meet the executive's mind.

When a good salesman goes out to accomplish a sale, if he is a real good salesman, he doesn't come into a place and say, "Mr. Smith, I want to sell you this." He finds out what Mr. Smith likes, whether he plays a good golf game or not, what is his hobby, or something like that, and gets Mr. Smith interested. If Mr. Smith is interested in the weather, he talks about that; but he talks about something that gets Mr. Smith smiling. Possibly he tells him a joke or two. When he gets him in good nature, he leads up to his subject. He has discovered beforehand what Mr. Smith wants or what he thinks he wants and then after a while, he gets Mr. Smith in the position where is willing to accept the service the man is going to render him.

It seems to me that every cost man is exactly in that same situation. He must sell the executive his wares; he must get to the executive's mind; he has got to understand the executive's way of looking at things. If he merely wants to be a compiler of figures, all right, but he must understand he is in the paper business and not the figure business, and so he has to learn to look at the paper business through the executive's eyes; he must study the executive; he must play one executive differently from another if he wants to put his proposition across, for unquestionably he must sell it to the executive.

The cost accountant must be tremendously persistent in doing that even if he encounters many rebuffs.

Of course, you have got to use some intelligence in your persistency. It seems to me a speaker I heard the other night gave three little points in human nature which might be aptly used in this connection. In the discussion he said there were three main instincts of human nature.

The first was the feeding instinct. It occurs to me that a parallel for the cost man in the feeding instinct is this: that a man must constantly feed his mind with this proposition of costs. It is a fact that experts disagree today on just the proper method to use but experts do agree on the fundamentals but whether you do it this way or that way or the other way is a matter possibly of proper discussion.

When I was going downstairs a little while ago, after the meeting, I heard two gentlemen talking. This is what they said: "How does he expect us to do all that detail on that chart?" Well now, I don't know the two gentlemen, so none of you need blush, but it occurred to me that those two men, whoever they are, did not understand the fundamentals of cost work and they have got to study them. Every man in cost work ought to study all kinds of systems. I know a good many kinds of systems other than the one we use and that may be the reason why I respect ours more.

But if you are going to really understand anything about cost work you have got to study and study and study, and possibly, one of the reasons why cost systems have not made the advance that they should is because cost clerks don't study enough to know that cost systems, or facts can be presented in an intelligent way so that the executives can understand them, and it may possibly be that the executives do understand these cost systems.

Unquestionably, a constant study of cost work is at the basis of proper progress of cost system work if we are going to make the progress that we ought to. I can't help repeating right now that I think that Mr. Reilly, by starting this proposition that he has this afternoon, has started something of great value if we will only use it right, a magnificient methohd, I think, and by working together, we can study this cost system proposition and have a better cost system in the paper business than we have ever had.

The second instinct is the fearing instinct, and that is most human. It seems to me that that is a particularly apt instinct for the forwarding of the cost system business. It seems to me that every man ought to be afraid that his figures won't tell the truth; afraid that his figures don't mean anything, that they are a jumble; that they don't draw pictures for the executives in the way that the executives can understand them, because, after all, the fundamentals of a cost system are not figures but pictures. Figures ought merely to translate to the eyes of the man reading them the moment in the department, the movement of the goods, the movement of the operating expenses and supplies, and all that sort of thing, and if they don't draw pictures then they don't tell the story, it seems to me. And a cost man ought to be afraid of losing his job, and even more than that he ought to be afraid that he won't make the advances which he can make if he uses this wonderful thing—a cost system—in the way he ought to.

The third instinct of human nature, this gentleman brought out, was the fighting instinct. I don't know anything that permits of such a thorough knockout, wrestling fight, as a good cost system, because every man from the superintendent down to the last man is against you when you show him by the figures that he is wrong in his methods, and he is eager to fight you, and it seems to me that a first-class cost man who is on the way up ought to have a tremendous fighting instinct; the fighting instinct that will compel him to prove that his figures tell the truth, the fighting instinct that will compel him to make himself such an infernal nuisance to everybody below him and such a diplomate to everybody above him, that they will take action on what his figures show should be done.

It seems to me the fundamental of this whole business lies in two phases. In the first place, a good cost man has got to sell himself to himself. How many of you gentlemen so thoroughly believe in your own ability, not only to produce right costs but to produce costs that will tell you what is happening in the factory; how many of you who are putting figures together see what is going on in the factory; how many of you, who are putting figures together to make a picture of what is happening in the factory, really see the picture, because if you can't see the picture you can't see the faults in it?

Until these things talk to you and mean something, then you haven't sold yourself to yourself, and as a cost man until you sell yourself to yourself, then you cannot do the things which are absolutely necessary to make cost system work successful. Sell yourself to your company and sell yourself to your people, because I can promise you this: that when you have sold yourself to yourself so that you know all kinds of cost systems, so that you are satisfied and can prove that the cost system you have in operation will tell the story and that you can draw a picture that shows the fault that you see and shows it so well that you can point it out to the other fellow, then your cost system is working, and then you are not merely putting in time and making figures.

Cost work is a tremendous sea of figures. I imagine if all the figures that were made on cost work in any one week were put together, that would make, I don't know how many chains around the world, but probably we could fill an ocean with them — with a year's figures. But they would be absolutely a useless sea of figures if the fact were merely flotsam and jetsam. We have got to take these seas of figures and pick the actual facts out of them and until we can do that we have neither sold ourselves nor are we able to sell ourselves to our company.

Gentlemen, from my experience it is the man who makes the system, and not the system that makes the man.

Pulp and Paper Mill Accessories, Ltd., Montreal have been appointed sole selling agents in Canada for The Rai-Tillieres Wire Works (Branch of the French General Electric Co.) of Normandy- France. This Company is old established and is well known as manufacturers of high grade brass and phosphor bronze Fourdrinier wires, cylinder covers, etc.

The "Rai-Tillieres" Wire Works (formerly, for a century, known as "Mouchel Sons" to whom was granted in 1772 the original Letters Patent to manufacture metallic wires) have always specialized in the drawing of fine wires in copper, brass, bronze, and aluminum.

THEFT AND PILFERAGE CLAUSES IN INSURANCE CONTRACTS

U. S. Consul Leslie E. Reed, London, October 24

As a result of the decrease in amount of theft and pilferage, British underwriters have decided to withdraw the pilferage clause which they have been accustomed to include in their contracts. This clause provided that only 75 per cent. of the value of claims for theft of goods in transit would be paid by underwriters. A new standard clause was adopted by Lloyd's underwriters on October 12, as follows:

(a) It is hereby agreed that this policy covers the risk of theft and or pilferage, irrespective of percentage, but underwriters' liability in respect of any goods so lost not to exceed their shipping or insured value, whichever is the smaller. No liability for loss to attach hereto unless notice of survey has been given to underwriters' agents within 10 days of the expiry of risk under the policy.

(b) It is hereby agreed that this policy covers the risk of nondelivered for which the liability of the shipowner or other carrier is limited, reduced, or negatived by the contract of carriage by reason of the value of the goods, but underwriters' liability in respect of any goods so lost not to exceed their shipping or insured value, whichever is the smaller.

"Shipping value," as used above, means the prime cost of the goods to the assured by whom or on whose behalf the insurance is affected, plus the expenses of and incidental to shipping and the charges of insurance. Underwriters to be entitled to any amount recovered from the carriers or others in respect of such losses (less cost of recovery, if any) up to the amount paid by them in respect of the loss.

—U. S. Commerce **Reports.**

NO FEAR OF EUROPEAN COMPETITION

There is scant probability of real competition for American newsprint from Europe in the next few years, according to Philip T. Dodge, president of International Paper Co., just returned from a four months' tour of Europe. Even assuming that Germany and the Scandinavian countries could continue producing at capacity they could not ship enough print paper to supply one-tenth of our needs, says Mr. Dodge, Germany is not making enough paper for her own needs. Norway and Sweden can be expected to continue to ship newsprint to this country as they have a surplus. Finland, with abundant natural resources, but few mills, is sending a good part of her pulp to England, where it is converted into paper.

Stagnation of the printing trades in Scandinavian countries has been brought about by the fact that Scandinavians have been sending their printing orders into Germany where prices are cheaper, and have also been reaping the benefits of cheap postage rates out of Germany in circularizing customers.

Mr. Dodge got within forty miles of Petrograd. Representatives of the Soviet Government offered him safe conduct. The Soviet is asking American business men who are abroad to visit Russia, to interest them in putting American capital and methods in Russia with guarantees (so-called) as to safety. The Soviet would appease the demands of Communism by claiming that a small amount to be paid as taxes constituted a levy and that the company was really operating under what is euphemistically styled a license.

CABLE COMMENTS ON WORLD WIDE CONDITIONS

The following items are quoted from "Commerce Reports", published by the U. S. Department of Commerce. They are based on cable reports to Washington, of foreign representatives of the Department.

Economic Situation in Japan Shows Improvement

Economic developments during October included a favorable trade balance, a lessened credit demand, a decline in the note issue, a halt in the diminution of the gold reserve, a slight decrease in the cost of living, and a marked decline in the number of labor disputes. The favorable balance was due chiefly to general declines in the import trade, especially of raw cotton, and to heavy shipments of raw silk at advanced prices. Export values of cotton yarn and cotton textiles were greater than in September. Import values of dyes advanced. Commodity markets were generally dull, except for marked activity in raw silk and a slight improvement in vegetable oils. Rice prices fell, as as abundant rice crop this season was assured.

General Improvement in Chinese Domestic Situation

A general improvement in the Chinese domestic situation has resulted in a slightly increased demand for goods from the treaty ports. The textile market is rapidly approaching a healthy state, with silk as the strong feature. American loans to the Republic of China now total $31,000,000, U. S. currency, of which amount $20,500,000 is in default.

Belgian Franc Fluctuation Affects Business

Although the Belgian public has shown a surprising lack of confidence in the franc, its recent depreciation is regarded as being largely due to seasonal grain purchases. Greatly increased business activity has resulted from the exchange fluctuation during the month. Much speculation is in evidence on the Brussels stock exchange. The fall in the franc has generally served to protect Belgian industries from foreign competition.

Philippine Favorable Trade Balance Checked

Philippine foreign trade increased in October, but experienced an unfavorable balance, diminishing by 1,000,000 pesos the credit balance of the islands, which, however, is substantial enough to aid materially in restoring business confidence. The sugar outlook is hopeful and the demand for other native products is good. Abaca production for the month exceeded all previous records.

Business Better in Spain

Business activity in Spain has improved to about normal. The cotton industry is in an especially favorable situation, with the mills working at capacity. Extensive purchases of various kinds of equipment are being made throughout Spain, particularly by railway and tramway companies, also for port works and other Government projects. Recent abundant rainfalls have made crop prospects increasingly favorable.

Swedish Industry Comparatively Inactive

There has been no material change in Sweden's economic situation since the middle of October. The demand for goods is low and industry comparatively inactive, but the general depression is somewhat relieved by increasing export movements and the employment of shipping. Bank difficulties continue, the Verdlands Bank being expected to undergo reorganization in the near future. The sowing of fall grain has been seriously delayed.

General Improvement in Norway's Economic Situation

Norway's general economic condition is improving. The note circulation, which shows in general only a slight fluctuation, has a slight tendency at present toward a decrease; the foreign exchange value of the crown is slowly rising. The stock exchange was much more active in October than in September, and a considerable increase in industrial activity is noticed during November. An automatic reduction in wages is resulting from a decline in prices.

VARIATION IN WEIGHTS

By THOMAS WARNER in "Making Paper"

There are a number of pulp regulators and automatic stuff gates on the market, but when they guarantee to keep print paper to a certain per cent. of one per cent. they do so under the presumption that a paper machine is as perfect as a watch (which it is not) and the stock never changes (which it does). They do not allow for any one of the following: Belts slipping on main drives, basement drive, fan pump, water pump, screen drive, and others, any one of which will make a variation in weight, not to mention variable steam pressure.

Then there is the change of stock from quick to slow, and where pits are used under the Fourdrinier instead of the savealls, there is generally an overflow, so when the stock comes slow there is less overflow and an increase in weight of one or two pounds, and when the stock comes quick (free) on account of jigging the stones, or a larger proportion of sulphite, the pit overflows more and the weight runs down light.

The beater system mill has the advantage of being able to deliver stock of tolerably even consistency to the paper machines, and a good beater man can keep his stuff nearly right, but some of his helpers are apt to use twice as much water as others to wash down the stock, but besides, each beater man has his own idea of what is the right consistency, so there you are.

The tank system mill must take the stock as it comes from the deckers, also the sulphite, and it is not possible for human agency to deliver the stock of an even consistency, so various schemes are resorted to in different mills to attain that end. Pulp regulators that will automatically hold the pulp to an even consistency are coming to the front. But even so, there will be variations in the weights from the above mentioned causes, although the strictly up-to-date big machines with their well-proportioned drives for fast running, and large stuff chests will avoid many of them.

WOLVES FORCE BEAVER TO CUT DOWN TREE

Last week at Lookout a man was treed by four brush wolves. Soon two of them moved off. Shortly after the two animals returned, with a beaver between them. They forced the beaver to begin work on the tree but before it had quite finished gnawing through the trunk a party of hunters came along and a tragedy was averted.

NOTE: It is not necessary to believe this.—Ed.

If you want the International Number, free write us before Dec. 15th.

An Organization for Developing Direct Advertising

The Montreal Paper Club held its first meeting of the 1922-23 season at the Queen's Hotel, on November 28. Mr. R. M. Maclean presided over a good attendance.

The address was delivered by Mr. H. Trill, advertising counsel for the Federated Press. It was on "Direct Advertising and its Relation to Paper and Printing Salesmen." He spoke as follows:

I am going to take a few minutes of your time to tell you a story. I have three reasons for doing this:

First.— Because it is the proper thing to do.

Second.— Because it is a good story.

Third.— Because it has a bearing on what I am going to say.

I have told you the story because I wish to recapitulate some very obvious facts, and I do not wish you to pass the same judgment as did the gentleman of Verdun about the white horse, until you have heard the conclusion at which I hope to arrive.

It has been my experience that *the plain statement of obvious facts often leads one to very unexpected conclusions.*

Let us first find a *point of contact.* We are all interested in the sale of paper, either as paper makers or as printers because Paper is to D. A. as the sausage skin is to the sausage and as such we are all interested in "direct advertising" because all direct advertising is conveyed on paper.

Therefore anything that affects direct advertising affects the sale of paper. If we can eliminate any factor which militates against the greater use of direct advertising, and if we can assist any factor which makes for the greater use of direct advertising or makes its use more effective, we shall have done something to increase the sale of printing and of paper. Possibly there is no better way in which we can increase the sale of these commodities than by increasing the use of direct advertising. You will notice that I am speaking of the sale of paper as a whole, and disregarding the particular claims of any special paper.

Let us agree, then, that increased sale of paper and of printing depend on increased appreciation and use of direct advertising, that is, we are to consider *selling direct advertising.*

Now, the first problem of the advertiser is an analysis of the product he intends to advertise, and to do so from the buyers point of view.

I have really not time now to discuss the functions of direct advertising. Let me mention the fact that knowledge of it among progressive advertisers is a vital function in advertising campaigns, which cannot be overlooked without jeopardizing the success of the whole campaign.

Now to look at direct advertising from the buyer of advertising point of view. Let us remember that paper, while extremely interesting to us, is supremely uninteresting to the layman.

Let me remind you to that to the man who pays the bills, advertising is an expense which he grudingly admits is probably necessary, but which he hates to pay almost as much as he hates charitable donations. But there is one thing in which all executives are vitally interested, and that is *sales.*

Now when the C. P. R. wishes to sell tickets to the Rockies, it does not spend money to show retouched photographs of its track, nor does it lay emphasis upon the superior timber of its ties, but it does show and does spend money to show pictures as beautiful as it can make of the Rocky mountains.

When Fleishman's Yeast wants to sell more of its product, it does so by trying to make people eat more bread; or feel the need of vitamines.

This principle applied to our present problem means that the way to increase the sale of paper and of printing is to make people want to increase their sales by the use of direct advertising. Let us consider for a moment the type of man in whose mind we desire to create this impression. He usually falls into one of three types:

1st. The competent advertising manager.

2nd. The promoted clerk, whose business is to check printers' prices and advertisers' statements.

3rd. The general utility man on whose already overburdened shoulders advertising is dumped because there is no one else who is willing to take an interest in it.

We have little to say with regard to the first of these types. If he is competent he knows the function of direct advertising. He knows how to produce it and cannot be talked out of it.

But when one of the other types is given an appropriation the only person he can call in to advise him on the situation of it is an advertising agency, and conscientious and experienced as he may be, he is still bound to favor that form of advertising to which his organization is adapted, which can be handled by him with the least trouble, and which will return him the greatest profit for the smallest outlay of time and trouble.

Thus, it is the easiest thing for both the agent and the advertiser to shoot the money into a series of newspaper or trade paper advertisements, and trust to the little gods of circulation and cumulative effect to produce some intangible but probably justifiable result.

It has been said that good Americans, when they die, go to Paris; experience seems to indicate that good direct advertising men, when they graduate, go into an agency.

But suppose by some fortunate accident such an advertiser as we have indicated does feel the need of some direct advertising. Immediately he finds himself out of the nice safe line of newspaper advertising, which will bear him painlessly almost from the passing of the appropriation to the paying of the final bill, and finds himself in an almost unchartered sea in a small boat, in which a great deal of the paddling has to be done by himself. He is immediately confronted with a multitude of perplexing details. He has to worry about mailing lists, copy, art work, plate making, printing prices, clipping or sealing, folder or booklet, overhang or flush cover, stamp or permit, return card, addressing, and not least *paper.*

To whom shall he go for advice?

Let me give you a concrete instance which very exactly illustrates what happens to a man in this position. A certain firm in Montreal desired to produce a series of folders from fifteen to thirty-five thousand a month, in which there are an unusually large number of details to take care of. He did not know any printer in Montreal particularly well, so he went to the Graphic Arts, who gave him the names of five printers who could take care of his entire requirements, from receiving the article to be advertised to delivering the folders addressed ready for the mail. He was given five names, he asked these five printers to submit prices and probably dummies on this work. Only one of those five can win out, but whichever one wins will use paper, the product from a certain mill.

I have been at some length in explaining the situation in this matter to illustrate that direct advertising is largely unorganized and a matter of great difficulty to the advertiser, while indirect advertising is highly organized and made very easy for the advertiser by very efficient advertising agencies.

Now just so long as this somewhat hap-hazard arrangement remains, just so long will direct advertising fall short of its legitimate share of advertising appropriations, because for just so long will direct advertising continue to be relatively ineffective.

I pointed out a moment ago, that where five printers are competing for a single campaign, the order must involve business for a paper house.

There are in Canada a few paper manufacturers, and there are thousands of printers. As far as direct advertising is concerned, the paper maker has left himself in the printer's hands to a very large extent.

A few progressive printers have taken up the burden of selling direct advertising, and have engaged men to do this work for them. The situation is very much as if the paper houses were a huge reservoir with a very large number of outlets on only a few of which there are any taps. Suppose for a moment that instead of leaving a burden of selling direct advertising entirely to the printer, the paper makers of Canada the ink makers, the commercial artists, together with the printers as a whole, were to see that the making of the direct advertising idea was a vital factor in the sale of their product, and were to form or subsidize a direct advertising agency, on the basis that the total output of such an agency would be divided, as far as the paper was concerned, among a very few competing paper houses.

Such an agency should have (1) sufficient money to educate the advertisers into the proper functions of direct advertising.

(2) Speak for direct advertising with the same authority as does the agency to-day with regard to indirect advertising.

(3) Give authoritative and special service to the buyer of advertising.

(4) Be of very great assistance to every printer.

(5) It could employ well trained experts, and lastly, every move that it made would sell more paper, more ink, more art and more printing.

But suppose this is somewhat utopian dream. Still it is an ideal which is well worth while to work towards. What then is the first step?

I would say that the first step in the universal sale of direct advertising would be the education of the printer and the advertising buyer into just exactly what the functions of direct advertising are and make it very easy for him to produce effective direct advertising.

And the only logical method of doing so is by co-operation of all the forces which will benefit by such education and through the medium of direct advertising.

I think the time is now very ripe for the undertaking of just such a campaign, aand since paper houses will probably reap a greater benefit from such a campaign than any other factor I think this is the right place to make such a suggestion and that the paper houses are the right people to start the organisation necessary.

And I have this further suggestion to make. Instead of merely telling people that they *should* use Direct Advertising I would show them exactly how they *can* use direct advertising.

I would convey my message through series of direct advertising features which should themselves be examples of every type of direct advertising.

And I would arrange that these features should be kept as samples by the recipients in a form of portfolio so that when a man wanted to get out a piece of direct advertising he would not have to trust to the chance of having received and kept some folder or booklet that happened to come through the mail, but could turn to this portfolio and find there a sample of the form that is best suited to his immediate need and that included every minute technical detail of its make-up so that he could place his order clearly concisely and with the definite under standing that he was ordering exactly what he was expecting to get.

As I see it there is one thing above all others which paper man and printer need to put direct advertising on the map—and that is organization.

Gentlemen, in the words of Ben Franklin, we have all got to hang together or we shall continue to remain in the air in the somewhat uncomfortable position in which we are at present situated.

BARNJUM FOREST FIRE RANGER PRIZES AWARDED

The Barnjum forest fire ranger prizes amounting to $825.00 for the Provinces of Quebec, New Brunswick, and Nova Scotia have just been awarded as follows—

In New Brunswick the prize of $250.00 was awarded to H. C. Lynn, Kedgwick, though the decision in this Province was very close owing to the keen rivalry for this prize, which has resulted in a well organized effort by the entire force to keep forest fires down to a minimum, resulting in the smallest fire loss in New Brunswick for many years. The results obtained have been of such great value to the Province and the men have responded so heartily in this fire protection work that Mr. Barnjum felt that an extra bonus should be paid to the second and third best record, though only one prize was offered in each Province, and he has accordingly forwarded a check for $50.00 to E. Baldwin, West Bathurst, and for $26.00 to W. R. Davidson of Five Fingers, N. B., as a slight acknowledgement of their splendid efforts in protecting the forests of New Brunswick from fire.

In Quebec the prize of $250.00 was awarded with the unanimous consent of all concerned to the widow of Albert l'Heureux of St. Michel des Saints, Berthier County, not only from the fact that he was one of the best Rangers in the Province but from the added reason that he lost his life in the performance of his duty; having given his life for his country just as much as if he had died on the battle field, for the saving of trees is the equivalent to saving life, for without trees life could not exist.

In Nova Scotia the prize of $250.00 was awarded to W. J. Scott of Middle Musquodobit who had the best fire fighting record for the season.

PAPER, STATIONERY, ETC. IN ENGLAND

By F. W. FIELD, H. M. Trade Commissioner

Reports on the state of the paper trade continue fairly good, and there has undoubtedly been an all-around improvement.

This improvement has been most noticeable in commercial papers made from chemical pulp, esparto, etc., and as a result many mills producing these classes of paper, known as "free from chemical pulp," are running full time. In spite of a tendency for prices of pulp to harden, prices of paper remain steady, and unemployment in this trade has decreased to a considerable extent.

So far this year the exports of printing paper have risen in bulk 50 per cent. in comparison with the same period last year.

The International Number of Pulp and Paper Magazine is out. Do you want one? Free until December 15th. 1922.

Eighteen Million Dollar Plant for Newfoundland

From the Morning Chronicle, Halifax

The Sir W. D. Armstrong, Withworth Company of London, England, will commence work at once breaking ground on the Humber river, preparatory to the erection of an eighteen million dollar ($18,000,000) paper plant. .

The British Treasury has guaranteed $9,000,000 toward the project, and Newfoundland the other half.

It is understood that John Powell, chief engineer for the Reid Newfoundland Co., will severe his connection with that organization and assume full control of construction.

The plant will be located on the Humber River, situated at Bay of Islands, on the west coast of the Colony, — a wide, deep, rapid stream, which, when properly dammed, should develop enormous electric power. For several miles from its mouth it is navigable to ocean-going steamers, and for shipment of product by water; all that is necessary is the erection of suitable piers.

During the winter months when the stream and Bay of Islands are blocked by heavy ice, shipments can be made via Port Aux Basques, which is only six hours distant.

Another big advantage which the site possesses is that the Reid Newfoundland railway skirts the Humber for upwards of thirty miles, both railway line and stream running through virgin wilderness, rich in spruce and fir necessary for the successful manufacture of first class paper.

The project was first broached about a year ago by the Humber Valley Development Company, but the scheme assumed such vast proportions that outside aid had to be sought, with the result that the original promoters merged with the Power Securities Corporation, Limited, of London, England, which corporation will carry on the work. This latter corporation has been incorporated under the British Corporations Act with a capital of nine million dollars, divided into 1,000,000 7 per cent. cumulative shares of $5 each, and one million ordinary shares of the same value.

Of the latter, 400,000 have been subscribed for cash at $5 per share by Armstrong Withworth & Company, Limited; Babcock & Wilcox, Ltd.; The British Thomson-Houston Co., Ltd.; the directors of Balfour, Beatty & Co., Ltd., and the directors of the Power Securities Company.

An issue of half a million of the preference shares at par, and 100,000 of the ordinary shares at $5 per share was offered to the public on October 30, the list closing on Nov. 1st. The brevity of the period during which the list remained open would suggest that the shares were practically subscribed before publication of the prospectus.

The directors of the Company are George Balfour, J.P., M.I.E.E., of Chiselhurst, chairman; Sir James Kemnal, F.R.S.E., of Chiselhurst; Howard Coppuck Lewis, Egerton Gardens, London; John Henry Brunel Noble, Park Lane, London; Andrew Henry Beatty, Putney Hill, S. W., and Wm. Shearer, Lauriston, Bromley, Kent; the two latter being the managing directors. The Company's bankers are Barclay's Bank, Ltd., Glynn, Mills, Currie & Co., and the Commercial Bank of Scotland, Ltd. Mr. Walter John Selley, London, is the secretary (pro tem), and his office, 66 Queen St., is the registered office of the company.

The company has been formed:

"To establish, transact and carry on the business of a Financial and Investment Company in all its branches for the purpose and with the object among others of assisting in the development of the engineering and electrical industries, and to carry on and undertake any business, undertaking, transaction or operation, commonly carried on or undertaken by financiers, discount houses, capitalists, underwriters of stock, or shares or debentures of companies."

An engineer, who recently visited the site, and discussed the proposal with the business men of the Colony, informs The Chronicle that the people are most enthusiastic about the scheme. They realize that the addition of $9,000,000 to their country's liabilities will mean heavy additional taxation, but they are willing to undertake the burden, firm in the belief that in time the Colony will reap handsome returns on the investment.

"One of the present grave problems of the Reid Newfoundland Railway," said this engineer, "is the matter of coal, every pound of which has to be imported from Canada. Hundreds of thousands of tons are used annually on the long haul between Port Aux Basques and St. John's, the cost of which means the difference between success and failure in operation. It may be that the surplus millions of kilowatts developed at the Humber plant may be diverted to the Reid Company, and the latter inaugurate a complete electrification of their railway system. The initial cost of installation would be enormous, but, I believe results would justify the expenditure."

PRICE OF CASEIN FORCES USE OF STARCH

The manner in which the price of casein has risen since spring when Congress imposed a duty upon this essential and vital raw material of the coated paper industry will force the use of starch and starch products as a substitute for the casein glue now used in large quantities.

This was disclosed at a recent conference in New York City of coated paper manufacturers when it was found that the supply of casein is so short that few manufacturers have more than a few weeks supply.

The price has risen rapidly since last spring, when a duty was imposed by Congress that is now nominally quoted at 20 cents, as against 10 cents, the price which prevailed before the duty was imposed. The imported product has been diverted to European consumers since the duty was imposed, while the domestic manufacturers have decreased the amount of casein manufactured by them, instead of taking advantage of the duty. Even at the high figures now quoted there is little casein to be had.

The rapid growth in the use of powdered milk, not only in the city homes where the cost of distributing pure bottled milk is a domestic problem, but by bakers, ice cream manufacturers and similar wholesale consumers, has made the domestic production of casein unprofitable as compared with milk powder, both substances being made from skimmed milk.

The only solution of the problem for the next three or four months at least, seems to be the substitution of starch for casein, in sizing of coated papers. This can be done coated paper, while the rise in the price of casein from 10 to 20 c means an added cost to the paper manufacturer without materially increasing the present cost of making of 1 cent per pound in his paper.

PULP AND PAPER CLUB VISIT LAURENTIDE

On Friday evening, Nov. 23, the members of the Pulp and Paper Club of McGill travelled to Grand'-Mere on an excursion, the object of which was to inspect the Laurentide company's properties at that place.

The party were met by Mr. Harry Bates, Science '08, Laurentide technical superintendent.

Mr. Bates conducted the party to the Laurentide Inn, where everybody was received as guests of the Laurentide company. An excellent breakfast was served after which Mr. Bates outlined the program for the day and the party started off on its tour of inspection.

The buildings and lay-out of Grand'Mere reveal at once that it is no ordinary place. That it was built for beauty as well as service is shown by the quaint artistic cut stone construction of the various administration and community buildings.

To be an employee of the Laurentide company must be a pleasure, for wonderful care is taken of them and the number of conveniences for their comfort and pleasure is surprising. The spacious assembly hall with dance floor, gymnasium, etc., community building and library; golf course, one of the finest in Canada, tennis courts, model dairy farm, which supplies farm produce for everybody, cafeteria in the mill, as well as large wash and locker rooms, company hospital with its attending medical staff, and last but not least, the Laurentide Inn, where the party were so admirably and hospitably entertained.

The executive staff of the company put themselves at the disposal of the party and the care and trouble which they had expended to make the visit profitable and pleasant was almost too much.

From the hotel the party as a whole went to the power house, one of the finest and most modern in existence. Mr. Riddle the electrical engineer, explained the general construction of the plant, the generations of power and its transmission to Quebec, Montreal, Shawinigan and Three Rivers.

The power house consists essentially of eight vertical shaft generators each of 22,000 h. p. capacity.

An interesting experiment was described which had been perfected for measuring the flow of water through the low head penstocks.

In brief two electrodes were placed a known distance apart in the penstock. A solution of salt was introduced above the upper electrode which changed the conductivity of the water, and the time taken for this salt to travel between the two points obtained, from which the amount of water in the given time can be calculated and the actual power of the generator obtained.

From the power house the party went to the Commuity Hall, where Mr. Blanchard, stock control superintendent, gave a very interesting talk on the manufacture of ground wood and sulphite pulps, aided by some very illustrative charts which he had prepared.

The party split up in groups of four. Each group was led by a guide who conducted them through the wood room, groundwood and sulphite mills and very ably explained the various processes and machinery involved in each.

A menu surpassing even that of the Ritz-Carlton was presented to the ravenous members of the party at lunch time. After this bountiful repast everybody again gathered in the Community Hall, where Mr. Van De Carr explained in a very interesting manner the process of making the prepared pulp into newsprint. Charts showing the path followed by the stock were given out as well as blue-prints of the details of the Fourdrinier paper machine. Individual samples of the wire used on this machine were distributed.

As in the morning the groups resumed their tour under the charge of their competent guides, who conducted them through the mixing room, paper machine room and finishing room. The electric steam generators were also visited which were a revelation in scientific achievement.

The party were very sorry not to have been able to thank Mr. George Chahoon for the wonderful visit which his generosity had afforded them, as he was unexpectedly called out of town, but wish to express their sincere appreciation to him and all those of the Laurentide staff who so generously gave of their time and knowledge to make the visit a most enjoyable and instructive one.

The party had the pleasure of being accompanied by Professor Charles McKergow and Dr. A. R. MacLean.

The Canadian Pacific Railway deserve to be complimented upon their efficient transportation and excellent service to so large a body.— From "McGill Daily."

The officers of the McGill Paper club are: Honorary President, A. L. Dawe; President, W. C. Munro; Vice-President, F. W. Bradshaw; Secretary-Treasurer, F. W. McCrea.

ARBITRATORS FOR PULP WOOD BUYING

New York, Nov. 30.—Selection of official arbitration scalers to carry out the pulpwood customs tentatively formulated for the handling of pulpwood contracts in New York State is the suggestion which has been made following the receipt of commendatory letters on the work already done.

The three grades which were tentatively suggested by the New York Committee of the Woodlands Section of the American Paper and Pulp Association, under the chairmanship of W. S. Smith, have met with such favor that it is now proposed to not only adopt these grades as the recognized three grades for spruce, but also to use them as a basis for purchases of other wood, with proper differentials between the going prices for spruce and hemlock, long logs, burned, rough, and old wood, etc.

The New York committee of the Woodlands Section of the American Paper and Pulp Association has further recommended the desirability of the employment of an official check scaler "for the purpose of settling disputes between pulpwood sellers and buyers, since it appears that, under the present systems, while most companies have adequate and comprehensive pulpwood contracts, there is no unified attempt to enforce the contact specifications. The committee recommends that one or more experienced official arbitration scalers be employed by the mills of a given locality and that he be a well paid man, with considerable experience both in the woods and in the wood room of the mill, in orded that he might judge intelligently as to the condition in the pulpwood as indicated by the outward appearance of the rot, knot or other defect."

It was suggested that, while not employed in actual scaling, these men might be used to advantage in educating the shippers, in making investigations as to the amount of shrinkage when 4 foot lengths are cut from logs, and other investigations of a similar nature.

TEN MONTHS' BRITISH TRADE

Steady Rise in Pulp Imports and Paper Exports

(From Our London Correspondent)

London, Nov. 20, 1922.

We are gradually creeping up to the end of another year and the time is now ripe for making a survey of the business and trade experienced up to the end of October. A new conservative Government has now got into power in London and optimists feel that the change may stimulate trade at home and abroad. If it does, we can rest assured that the pulp and paper industries will enjoy their share of the anticipated prosperity; but the revival must be tantamount to an exceptional period of progress, if the present unemployment and rates of exchange, not to mention unrest abroad, are to be taken into consideration. However, a Conservative Government stands a chance of stabilising the money markets and it evokes confidence in many foreign lands—and it is confidence we want nowadays. But looking back on the past ten months of British trade, when a Conservative-Liberal-Independent Liberal,—known as a Coalition,—Government was in power, it cannot be said, when the money markets and troubles abroad are viewed, that the figures are disappointing. The wonder is that they have reached the height they are in today and they speak volumes for the resourcefulness, the speeding-up methods, and the ingenuity of the British papermakers and pulp sellers who have had to fight against great odds, including a dilatory Government.

Pulp Imports

Looking at the supplies of pulp one noticeable feature is the prominent position of Canada—and it shows what Canadians can do when the market on this side is tackled with some seriousness. The total shipments of groudwood from January 1 to October 31, from all countries reached 434,944 tons, compared with 265,612 tons for the corresponding period last year. Of these shipments Canada sent 106,077 tons, compared with 93,371 tons last year; Norway, 226,232 tons (146,853 tons); Sweden, 87,423 tons (13,308 tons); and other countries 15,212 tons (12,080 tons). These figures show that Canada has become the second country in the world for supplying the British market with groundwood. And with more perseverance it should be on top of the list.

The value of the 226,232 tons received from Norway is put down as £1,151,203 and that of Canada's 106,077 tons at £595,293. The total value of all the ten months' shipment is placed at £2,245,454. It will thus be seen that a market which takes over £2,000,000,000 worth of groundwood in less than a year is not to be dispised and a £1,000,000,000 in Canada is better than £1,000,000 in Norway. And there are no bad debts.

Chemical Pulps

Canada also has a share of the chemical pulps trade, but it still remains in its infancy. The total amount of bleached chemical pulp received from all countries of supply for the ten months was 17,850 tons, valued at £402,-953, compared with 11,556 tons at £592,715 for the corresponding period in 1921. Canadian supplies are included in these values, roughly about 2,500 tons, but the largest supplies are Norway (7,836 tons) and Sweden (5,324 tons).

Unbleached chemical pulp was imported to the extent of 239,043 tons (valued £3,945,572) compared with 164,-732 tons (at £6,365,939) for the corresponding period. Sweden shipped 127,660 tons valued at £2,184,218 (last year 113,045 tons at £4,474,651). Here we have an eye-opener for the Canadian mills in one country's supplies alone! Norway comes next with 41,187 tons, valued at £831,279; Finland 38,004 tons at £489,114 and Canada and other countries—mostly Canada—31,016 tons, valued at £426,519. Only a little over 7,000 tons arrived from Germany, the trade of which nation has fallen on the shoulders of Scandinavia.

Taking all the supplies of pulps from different sources the value up to the present, for 10 months, is £6,800,982. Last year when prices were on a higher level it reached £10,360,557. These figures show how important the market is and how important it is to study its requirements. Shipping between British ports and Canada is very greatly improved and if one large firm can grip a share of the market here, surely it is reasonable to contend that another can do likewise?

Paper Exports and Imports

Turning to the products of the British mills, including newsprint wrappings, cards, etc., the ten months export trade alone rose from 595,19 1-5 tons, at £6,667.251, in 1921 to 92,393 3-4 tons, at £5,340,298 from January 1 to Oct. 31. Printing paper exports jumped from 624,-621 cwts. to 1,098,811 cwts. Packing and wrapping papers were more than doubled in the exports, but there is a falling-off in cardboard, mill and strawboard, cartons of paper and certain classes of stationery. Strange to say that Canada during the ten months purchased 693 1-2 tons of good quality printing paper, compared with 102 tons in 1921.

Australia preference is also reflecked in the figures. For the ten months 459,271 cwts of newsprint was exported, compared with 241,094 cwts in 1921. New Zealand supplies have also doubled. Australia has also purchased double supplies of writing paper, while New Zealand's demand shows a material decrease and same may be said in regard to Canada.

The British imports have risen from 266,704 3-4 tons, valued at £9,680,612, in 1921 to 446,228 tons, valued at £10,079,343. A perusal of the foregoing figures will show an interesting comparison of the import and export trade—the former nearly doubled the latter in value—and it will give an idea of what the British mills have to compete against. Canadian supplies of newsprint have risen from 260 tons to 6081 1-4 tons in 1922 and Norwegian supplies have trebled. Newfoundland shipments increased from 594,160 cwts to 851,577 cwts. Scandinavia takes the lead in supplying packing and wrappings, but Canada has risen in the import list to 98,012 cwts. for the present ten months, compared with 12,842 cwts. in 1921.

Making a general view of the British imports, Canada's increased trade is shown in packings and wrappings, newsprint, groundwood, and unbleached chemical pulp. These are notable features—and they should be increased and well maintained for the benefit of the Dominion.

SAFETY PAYS

We noted recently that the Spanish River Company was organized for an intensive safety campaign. We have before us the report of this Company's three mills for October showing an average accident reduction of 53% in the three mills. The record at the Espanola mill was 72%.

The accident record of the three mills for July, August and September was an average of 2 per 100 men. In October the record was 0.9 per 100 men.

A record such as above should act as an eye opener to other mills in Ontario where accident prevention has not yet assumed the position it ought to hold in up-to-date mill management.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Product

A-1 The Chemistry of Wood. Analysis of the Wood of Eucalyptus Globulus and of Pinus Monticola. S. A. MAHOOD and D. E. CABLE, Forest Products Lab., Madison, Wis. **J. Ind. Eng. Chem.**, xiv, 933-934, (Oct. 1922). The analyses were carried out on 80-to 100-mesh ground sawdust prepared as described by Schorger (**J. Ind. Eng. Chem.**, xii, 873, 1920). The lignin determination method is given. The results of the analysis of four representative samples each of western white pine and eucalyptus are tabulated and commented. In most cases the results parallel rather closely those obtained by Schorger for conifers and deciduous trees respectively.-A.P.-C.

A-1 The Calorific Value of American Woods. S. W. PARR and C. N. DOVIDSON, Univ. of Illinois **J. Ind. Eng. Chem.**, xiv, 935-936, (Oct. 1922). The authors show that by dryiing wood (1 g. of fine sawdust) for one hour at 105°C in air a substantial equilibrum is established; while by drying at 137°C. in an atmosphere of CO_2 values about 0.2 to 3% higher are obtained. At the higher temperature about 0.3% of volatile matter other than water is given off, as shown by collecting and weighing the water given off. The calorific values (B.t.u. as received and calculated to the dry basis) were determined for pine, oak hickory, cherry birch and poplar.-A.P.-C.

A-1 B-4 C-2 Ethyl Alcohol from Western Larch (Larix Occidentalis, Nuttall). E. C. SHERRARD, Forest Products Lab., Madison, Wis. **J. Ind. Eng. Chem.**, xiv, 948-949, (Oct. 1922). A method is given for the fermentation of 70 to 80% of the total sugar resulting from the acid hydrolysis of western larch. This method is equally satisfactory for the fermentation of galactose alone, of which western larch contains 8-17%. Yields up to 33.4 gal. of 95% alcohol per ton of dry wood were obtained.-A.P.-C.

A-3 Nigerian Grasses for Paper Making. Bull. Imp. Inst., xix, 271-282, (1921); **Chem. Abs.**, xvi, 2223, (July 10, 1922). Examination is reported of the following grasses from West Africa: ekong (**Imperata cylindrica**, Beauv) esum (**Pennisetum**, sp.), eduwa (**Andropogon tectorum**, Schum), jinfi (**Andropogon Gayanus**, Kunth), gamba (**A. gayanus**, Kunth), sasari (**Chasmopodium afzelii**, Stafp), tsauri (**Cymbopogon giganteus**, Chiov), yama (**Hyparrhenia rufa**, Stapf), kitsi gujma (**H. rufa**, Stapf), baya maria (mixture of various grasses), and wuchiyan bera (**Clenium elegans**. Kunth). The results show that the grasses on the whole give very satisfactory yields of pulp and that the pulps have good felting properties and are capable of producing strong papers of good quality. The yields of pulp (30 to 53.5%) compare in most cases favorably with those obtained from Spanish esparto when treated under the same conditions. The pulps are of similar character to one another and closely resemble esparto pulp, although the ultimate fibers are rather shorter. In most cases they bleach easily and would be suitable for the production of good class writing papers.-A.P.-C.

A-6 C-2 The Utilization of Bark as Fuel. E. R. SCHAFER, Forest Products Lab., Madison, Wis. **Paper Trade J.**, lxxiv, No. 21, 57-58, (May 25, 1922). A brief résumé of the literature in the files of the Forest Products Laboratory. -A.P.-C.

A-9 H-5 Hypochlorous Acid and Chlorine with a Comparison of Their Bleaching Action. R. L. TAYLOR. **Am. Dyestuff Rep.**, x, 329-330, 347-349, (1922); **Chem. Abs.**, xvi, 2200, (July 10, 1922). Bleaching by chlorine may not be altogether due to the decomposition of water as the chlorine may act directly on the coloring matter. Contrary to the views of Higgins, the author considers chlorine a better bleaching agent than hypochlorous acid.-A.P.-C.

A-13 Development of Tests for the Fastness of Dyestuffs. W. J. MURRAY. **Am. Dyestuff Rep.**, x, 231-232, 344-345, (1922); **Chem. Abs.**, xvi, 2226, (July 10, 1922). A sketch is given of the methods of testing fastness to light, washing and perspiration in use during the past 50 years. The various methods are tabulated, showing date, authority, conditions of test, time, manipulation, and standards. The American Society of Textile Chemists and Colorists it at present working to establish standard tests for fastness. -A.P.-C.

A-14 The Elmendorf Tester. "A. B. C." of Paper Quality. J. H. HOUGHTON, Thwing Instrument Co. **Paper Trade J.**, lxxiv, No. 11, 50-53, (March 16, 1922). A discussion of the importance of the tearing strength of papers and of the merits of the Elmendorf tester for determining it, with the results of a large number of tests of various weights of kraft, bond, wrapping, tag, half-tone, book, ledger, writing, waxed and manila made by the U. S. Testing Co.-A.P.-C.

A-14 A Supplementary Study of Commercial Instruments for Determining the Tearing Strength of Paper. PAUL L. HOUSTON, Bureau of Standards. **Paper Trade J.**, lxxiv, No. 10, 43-46, (March 9, 1922). A description of the Elmendorf Paper Tester and of the theory of the instrument. The instrument was calibrated and was found to be graduated correctly. The resistance due to friction in the ball bearings of the segment and in the sleeve of the indicator was studied, and it was concluded that any errors due to slight variations in friction would be too small to be considered. A number of paper samples were tested to determine the possibility of obtaining check results using different plies of the same sample. Considerable variations were obtained when different plies were used, and it is advised that for commercial work the number of plies to be used for certain grades and weights of paper be specified. The instrument is built on sound principles of mechanics, is calibrated correctly, and will perform satisfactorily if the number of plies to be used are specified.-A.P.-C.

A-14 The Detection of Formaldehyde in Paper. F. HEERMANN. **Textilber.**, iii, 101-121, (1922); **Chem. Abs.**, xvi, 2406, (July 20, 192). The detection of formaldehyde in paper or cardboard used for boxes is best accomplished by placing a piece of the sample directly into a solution of fuchsin-sulphurous acid. Lignin from wood-fiber gives a pink color after long standing, whereas the change is rapid if formaldehyde has been used as a preservative in the glue, etc., employed at the box factory. The method of Cohn (**Chem. Abs.**, xvi, 222, Jan. 20, 1922) is just as sensitive. Pieces of paper are placed in the solution or are moistened with it. In order to avoide the confusion resulting from the discoloration of the paper by the sulphuric acid, the color should be observed after a few seconds. Fuchsin-sulphurous acid solution may be used for the quantitative determination (Colorimetrically) or the method of Orchard may be employed (weighing the silver formed by reduction of alkaline silver nitrate).-A.P.-C.

A-14 K-23 Photographic Paper Base. .G. MOISAND **Mon. Papeterie Française**, liii, 421-422, (Sept. 1, 1922). Brief outline of the main defects to be found in paper used as a base for photographic paper.-A.P.-C.

A-14 A Simple and Practical Method for Measuring the Water-Resistance of Fiber Board and Wrapping Papers. E. O. REED, Bureau of Chemistry, Washington, D. C. **Paper Trade J.**, lxxiv, No. 3, 43-44, (Jan. 19, 1922). The most satisfactory method consisted in determining the ratio of the bursting strength of the wet paper to that of the dry paper. This was done by determining the loss in bursting strength (Mullen) after exposing to a column of water or definite height for a started length of time. A simple piece of apparatus for carrying out the test and the procedure used are described, and the results of a number of tests are tabulated.-A.P.-C.

A-14 K-23 A Study of Electrical Insulating Papers. J. Brit. Inst. Elec. Eng., lx 657-669, (1922); **Chem. Abs.**, xvi, 3205, (Sept. 20, 1922). An extensive study of paper to be employed for insulation (other than in the construction of cables) has been carried out and after collaboration with the manufacturers a series of definitions and tests has been drawn up which are intended to avoid ambiguities and serve as a basis for the development of acceptable tests. The report is divided under the following headings: definitions test recommended, chemical tests, and uses for insulating papers. Among the chemical tests the one for the detection of metallic particles consists in immersing the paper in a solution of potassium ferrocyanide saturation in dilute hydrochloric acid solution. Each iron particle will produce a blue spot on the paper. The application of a 1% silver nitrate solution to the surface of the paper will produce a black spot on each metalllic particle. The paper is dropped into a 1% solution of acetic acid and allowed to dry for one hour lying flat on a cloth. The sample is then dropped into a solution containing 1cc. of acetic acid and 1g. of potassium ferricyanide per liter. The iron particles will appear as blue spots and the copper, brass, and gunmetal as red spots.-A.P.-C.

A-15 The Viscosity of Cellulose In Cuprammonium Solution. I. Determination of the Viscosity. R. A. JOYNER. **Chem. Soc. Trans.**, xcci, 1511-1525, (Aug. 1922). The work was done along the same lines as that of Gibson, Spencer, and McCall (**Chem. Soc. Trans.**, cxvii ., 484, 1920), using a falling sphere viscosimeter. The author describes an apparatus for dissolving the cotton and transferring it to the viscosimeter entirely out of contact with the air. Results are given of the comparison of the Gibson Spencer McCall method with the present method, and of the effects of: (1) addition of sucrose, sodium chloride and sodium sulphate in the cuprammonium solution; (2) concentration of copper; (3) dilution by ammonia (keeping the ammonia content constant at 210 g. per 1,); (4) concentration of ammonia; (5) cellulose concentration.-A.P.-C.

A-15 The Yield of Glucose from Cotton Cellulose. J. C. IRVINE and E. L. HIRST. **Chem. Soc. Trans.**, cxxi, 1585-1591, (Aug. 1922). The main difference in experimental details from those previously described (IRVINE and SOUTAR this journal, xix, 1005, Sept. 29, 1921) lay in conducting acetolysis by W. L. Barnett's method (this journal, xix, 1006, Sept. 29, 1921). The overall yield from cellulose to glucose was 95.1% of the theoritical amount. "Considering the standard of purity in which the mixed alpha- and beta-methylglucosides were isolated, there can be no further doubt that cotton cellulose is composed entirely of glucose residues." (Compare MONIER-WILLIAMS, **Hydrolysis of Cotton Cellulose. Chem. Soc. Trans.**, cxix, 803, 1921.)-A.P.-C.

E. — Acid Processes of Pulp Manufacture and Equipment

E-1 A Starch Indicator Solution. W. J. PAINTER. **Analyst**, xlvii, 166-167, (1922). A starch solution prepared according to the following directions was found to be still useful as an indicator after 8 months. Boil common household rice starch and an equal weight of soda ash with the usual quantity of water. Cool, add concentrated hydrochloric acid until the liquid is acid to litmus. Add a little zinc and allow to stand 24 hours, and then filter the neutral solution. Starch paste prepared according to the directions of the British Pharmacopea did not keep 10 days.-A.P.-C.

E-2 Sulphite Waste Liquor as a Fertilizer. H. G. SODERBAUM. **Centralanstalten Forsokvasendetjordsbruk Medd. No. 230, Kemiska advel** No. 33,, 12 pp., (1922); **Chem. Abs.**, xvi, 2380, (July 20, 1922). The neutralized liquor contained 19.4% organic matter, of which 4 to 5% was sugar. The inorganic content was 3.5% of which 0.02% was potassium. No Phosphoric acid was present and the nitrogen content was only 0.02%. Experiments were carried out with oats on a poor sandy soil. The containers held about 30 kilos of soil, to which a basic fertilizer of phosphate, gypsum and sodium nitrate was added. The waste liquor was added in increasing amounts from 12.5 to 100 cc. per vessel. The results showed only in a few cases an increased yield of about 10%. No harmful effects were observed with even the largest amounts of sulphite liquor.-A.P.-C.

E-2 Durability of Sole Leather Filled with Sulphite Waste Liquor. R. C. BOWKER. **Hide and Leather**, April 22, 1922; **J. Am. Leather Chem. Assoc.**, xvii, 314, 315, (1921); **Chem. Abs.**, xvi, 2617, (Aug. 10, 1922). As a filler for vegetable-tanned leather sulphite waste liquor is as good as chesnut or quebracho extracts; it is as firmly fixed and yields as durable a leather. It has no deleterious effect during the aging of the leather. -A.P.-C.

E-2 The Manufacture of Acohol from Sulphite Waste Liquor. E. R. SOHLBERY. **Making Paper; Paper Mill**, xlv, No. 6 18, 20, (Feb. 11, 1922). A brief description of one production, on a commercial scale, of alcohol from sulphite waste liquor.-A.P.-C.

E-4 Use of Lime in the Sulphite Process. Mon. Papeterie Française, liii, 443-445, (Sept. 15, 1922). General description of the preparation of sulphite liquor by the mlik of lime and by the tower systems, with an outline of the method of analysis of lime or limestones.-A.P.-C.

E-4 Modern Fresh Liquor Preparation. HUGO LAUBER. **Zellstoff u. Papier**, ii, 86-89, (1922); **Chem. Abs.**, xvi, 2222, (July 10, 1922). Brief description of

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fice and mills are at Jacksonboro, Ont., say that their mills have rested easy as regards re-stocking pulpwood and their impression is that the market is due for a real stiffening. The company are going into the bush on a larger scale this winter, and while they are not operating camps of their own, they are putting in jobbers and expect to take out sufficient wood to stock their mills fully for next season. They find that the cost of putting up logs is going to be appreciably higher this winter than last.

A number of Toronto men are involved in an interesting law suit which has been commenced in the Nova Scotia Supreme Court, and in which Charles H. Jones & Company of New York, brokers, are the plaintiffs, and Clarke Brothers, Limited, pulp manufacturers, Bear River, N. S., are one of the defendants. The action involves a claim of $126,000 and the defendants include A. G. McIntyre, President of Clark Brothers, Limited, a firm of solicitors in Toronto and a firm of Toronto brokers. Action arose over a bond in 1921 for $2,000,000 secured by mortgage to the Montreal Trust Company, in which issue the plaintiff invested $76,000 in cash. It is claimed that the New York firm bought under inducements contained in a certified copy of a trust deed in which no mention was made of previous issue of bonds. Plaintiffs claim also that a legal opinion delivered to them made no reference to a previous issue and that no such issue was shown by the balance sheet. Another charge is that a mill at Port Joli had been described as part of defendant's property, though the mill had been burned down during the previous summer. The claim is made up of two amounts, the $76,000 invested and $50,000 damages.

F. W. Brawn, recently with Fraser Company, Limited, has accepted a position with the Nashwaak Pulp and Paper Company, Limited, St. John, N. B., as plant manager and assumed his duties there on Nov. 21st. Mr. Brawn has had more than ordinary experience in the manufacture of high grade pulp, having been sulphite superintendent with the Hollingsworth and Whitney Co., and the Brown Company, Berlin, New Hampshire for fifteen years each and was also for some time plant manager for the Fraser Companies, Limited, Edmundston, N. B. Mr. Brawn resigned his position with this company in March of this year and since that time has been taking a well deserved rest, spending his time between Old Orchard Beach, Maine, and Portland.

The Thompson- Hyland Lumber Company, Bay St., Toronto, are now shipping pulpwood on their 1923 contracts to various points and are buying large quantities. The firm report that they are in the market for 20,000 cords of peeled poplar.

An interesting address was delivered at a meeting in Hart House, Toronto, a few days ago, of the Canadian Institute of Chemistry, the speaker being D. A. Scott, who gave an account of recent research work in the process of manufacturing sulphite pulp, with a description and results of semi-commercial scale experiments on improvements, giving increased yields of pulp and determinations of the various by-products of sulphite pulp manufacture and their possible economic value. At the meeting a Western Ontario section of the Institute was formed. H. M. Lancaster, chemist of the Provincial Board of Health, was elected chairman of the Executive Committee.

Mr. Baker, of the District of Columbia Paper Company, Washington, was a caller on the Toronto paper trade during last week.

Charles Allan, of the Allan Paper Company, Limited, Simcoe Street, Toronto, has moved into his beautiful new residence at 23 Rosehill Avenue, Toronto. During the construction of his house Mr. Allan has been living at Woodbridge.

Mr. Arthur Baker, of Gravesend, England and Mr. William Adamson were guests of the Pulp and Paper Magazine at lunch last week. Mr. Baker, was the first chairman of the Technical Section of the Paper Makers Association of Great Britain and Ireland. Mr. Adamson is Technical Director of Chas. Walmsley & Co., who are building paper machines for Bathurst Co., Belgo Paper Co., and Price Bros. & Co.

The Elderkin timber tract of 5,000 acres owned by Wagstaff and Wetmore at Port Greville, Cumberland County, Nova Scotia has just been sold to H. W. Schofield and Co., St. John, N. B. price $20.00 per acre. Logging operations for long lumber will be started on this property immediately.

A neat bit of millwrighting was recently done at the Belgo Paper Mill. A bottom calender roll bearing was taken from the machine at 8.30 in the morning, the old babbitt removed, new babbitt poured. The bearing was machined and scraped, ready for the machine at 2 o'clock, and paper was being made again at 2.15.

THE LIVING THE WORLD OWES YOU IS A BAD DEBT

The world may owe you a living, but there is no way to collect it. Charge it off as a bad debt and forget it. For even if it were paid, the best you could expect would be a place in the poor-house, which though sometimes comfortable, is never a popular institution.

If you want a good living, as all rightly constituted men do, you will have to get it yourself.

And you will not get it easily, either, unless you have some wealthy relative whom you can persuade to die and leave you a fortune.

The young man starting his career with the hope that something will happen to gain him an easy berth is far more numerous than the easy berths thus obtainable.

Remember that in this world there are about a billion and a half people, and that you will do well to consider them all as competitors for that soft job you would like to have.

If you can work as hard and as intelligently as the first hundred thousand of them you will live in great luxury, and be an important man. After that your relative importance will depend a good deal on how long your working hours are and how wisely you spend them.

Of course you may not have a high order of intelligence. But you will never find out without working, for even the best minds do not discover what they are made of till industry has given them an opportunity to develop.

If you will approach the world on a fifty-fifty basis, figuring that it will give back about what you put into it, you are likely to lead a happy and a progressive life. But if you think that because you happened to arrive on this particular planet you must be taken care of, you are due for a pretty serious disappointment.

In these days when even the nations are not sure whether or not they can pay their debts to other nations, it is safe to assume that the world is not going to bother about the little debt it may owe to you—even if it admits that it owes it—which it never will.

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Do not be at fault.

PULP AND PAPER NEWS

Messrs. Ritchie and Ramsay, Limited, paper manufacturers, Toronto, have just put on the market a new line of coated folder known as " R & R". The sheet has been put out to meet the growing demand for a high grade coated paper that will fold and print well. It embodies all the qualities required for a "direct by mail" advertising folder and other purposes where a strong coated paper is needed. The body stock is composed of rags and No. 1 bleached sulphite, giving the necessary strength and folding qualities, while particular attention has been given to the coating, in order to produce a resilient sheet that will give the desired results. The firm have sampled the trade with the new stock which is made in 25 x 38-80, 25 x 38-100, and 28 x 42-120.

The Porcupine Pulp and Lumber Company has been given judgment for $8,904 against the Hoyle Lumber Company in connection with 1,272 cords of pulpwood cut by defendants on plaintiff's property.

Wheels have commenced turning towards the production of paper at Fort William. The Glencarin has docked at the town with 1,000 tons of sulphite pulp for the plant of the Fort William Paper Company. The pulp came from Sault Ste. Marie and was produced in the plant of the Spanish River Pulp and Paper Mills.

At a meeting of the Port Arthur Board of Trade a few days ago the President reported that he was in negotiation with an American firm, the name of which he did not divulge, which proposed to establish a plant in Port Arthur for the use of the products of pulp mills. It was a company, he said, which was strong financially and there was a big demand for its goods. Power and a site were required for the industry and it was expected that early in the new year a favorable report as to the final decision of the company to locate in Port Arthur would be made.

Power need of the city of Port Arthur has increased to such an extent it now demands all available power being developed by the equipment of Cameron Falls. To provide for future additions to the service Port Arthur Public Utilities Commission has requested the Hydro Electric Power Commission of Ontario to commence construction of an additional unit of the Nipigon Development. The Port Arthur Division of the Provincial Paper Mills, Limited, will be ready to use a large block of power early in the spring and it is stated that there is a possibility of the construction of a paper mill unit at the Thunder Bay mill.

The death took place in Toronto a few days ago of William Jarvis Wharin, who, as treasurer for the past 27 years of the Copeland-Chatterson Co., Adelaide St., Toronto, was known to the Toronto and Ontario paper trade. He had been a resident of Toronto nearly all his life but during the past few years had had charge of the company's branch at Brampton.

Returning to Vancouver after an extended visit to the East President T. W. McGarry, of the Whalen Pulp and Paper Co. stated two engineers would be brought out from Eastern Canada to investigate and report on extensive improvements proposed for the mills. It was not stated just what the improvements would include but several schemes are under way to increase production and to do so more economically. The Whalen pulp plants are operating as well as the lumber and shingle mills and the company's outlook is said to be bright.

The Spruce Falls Company commenced the making of sulphite at its new mill at Kapuskasing, Ont., the beginning of December. The company was promoted by S. A. Mundy, of Bradford, Penn., who was formerly identified with lumbering operations in British Columbia. Messrs. Morrow and Beatty have commenced construction on the new dam at Kapuskasing. They are going to build a small power house which will develop about 2,500 horse power. About 250 men will be employed. The work of building houses on the new town site is progressing satisfactorily.

From the office of the Spanish River Pulp and Paper Mills in Toronto it is learned that the Fort William Pulp and Paper Company, Limited, expect that the No. 1 paper machine will be turned over the latter part of December. Excellent progress is being made with its installation and when it is completed work on the installation of the No. 2 machine will be commenced. J. A. Bothwell, manager of the Brompton Pulp and Paper Company's mill at East Angus, Que., and R. H. Bryan, of the sales force, were visitors in Toronto last week where they took in the Royal Winter Fair.

The Provincial Paper Mills Company, Limited, University Avenue, Toronto, reports that excellent progress is being made in the installation of the paper machine in their new mill at Port Arthur. The Dominion Engineering Works of Montreal has made delivery and the machine is rapidly being set up under the supervision of Superintendent Knickerbocker.

The sympathy of the Canadian paper trade is extended to I. H. Weldon and Thomas Weldon of the Provincial Paper Mills, Toronto, in the death of their mother, Mrs. James Weldon, which took place a few days ago at St. Thomas, Ont. The late Mrs. Weldon had reached the advanced age of 94 years and her death came as the result of the effects of a fall. Her husband, James Weldon is still living at the age of 99 years.

Prescott men are named as incorporators of the International Fibre Board Co., Limited, as follows: Henry J. Wiser, Edward Lauster, A. C. Casselman and James W. Ault. The company, whose headquarters are in Montreal has an authorized capital of $350,000 and is empowered to manufacture and sell fibre products made from pulp, and to manufacture and deal in paper boxes, containers, paper, etc.

With power to engage in business as pulpwood owners, lumbermen, etc., the Pine River Lumber Company, Limited, has been granted a charter with an authorized capital of $50,000 and headquarters in Provost, Alberta. Among the incorporators are O. C. Yates, George F. Kenney, Raymond M. Lee and Robert S. Waters, of Provost, Alberta.

The New Ontario Colonization Company, whose of-various ovens for burning sulphur and of apparatus for washing and absorbing the gases.-A.P.-C.

E-4 Towers. A. D. J. KUHN. **Zellstoff u. Papier,** ii, 89-91, (1922); **Chem. Abs.,** xvi, 2222, (July 10, 1922). Comparison of the single and multiple tower systems. -A.P.-C.

E-4 E-0 Occurrence of Thiosulphate and Polythionate in Sulphite Liquors. RUDOLF SIEBER. **Zellstoff u. Papier,** ii, 51-56, 106-114. (1922); **Chem. Abs.,** xvi, 2600, (Aug. 10, 1922). Sulphite liquors prepared from gases free from sublimed sulphur contain only SO_2 and SO_3 with possibly a trace of thiosulphate. Mention is made of the possibility of lower oxidation products of sulphur being formed during the preparation of sulphite liquors by various methods and the effects of arsenic and selenium. Definite proof of the positive action of arsenic and selenium in the formation of these lower oxidation compounds was not obtained. It was shown that the cause of the formation of polythionates was the sublimed sulphur. The amount of polythionate and thiosulphate found was small and did not represent the total amount of sublimed sulphur which was present in the burner gases. A portion of the thionates appears quickly to decompose into SO_3 and the actual amount of thionates in equilibrum with the sulphite liquor seems to be very small. Methods for the analysis of these compounds are given.-A.P.-C.

E-5 Sugar Formation in a Sulphite Digester. E. C. SHERRARD and C. F. SUHM, Forest Products Lab., Madison, Wis. **J. Ind. Eng. Chem.,** xiv, 931-932, (Oct. 1922). The paper contains charts showing the rate of formation of sugar during the cooking of white spruce indicating that the rate of sugar formation is influenced chiefly by the temperature and concentration of free sulphur dioxide. Time is also a factor since prolonged cooking increases the sugar production but at the expense of the cellulose.-A.P.-C.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-2 Separation of Fatty Acids and Resin Acids in the Liquid Resin from the Sulphate Process. A. C. VON EULER. **Arkiv. Kemi. Mineral Geol.,** viii, No. 4, 21pp., (1921); **Chem. Abs.,** xvi, 2405, (July 20, 1922). The liquid resin obtained as a by-product in the sulphate process owes its consistency to the presence of a large amount of unsaturated fatty acids, often as much as 50 to 60%. Analytical methods for their separation are known, the best being Twitchell's, which is however expensive and too difficult. The author describes a number of experiments made in an effort to find a method which could be used on a commercial scale. He was unable to find anything satisfactory.-A.P.-C.

F-0 K-18 Preparation of Straw Pulp, Specially for Straw Board. F. HOYER. **Papierfabr.,** xx, 653-658, 689-693, 729-734, (1922); **Chem. Abs.,** xvi, 2600, (Aug. 10, 1922). A good general review of the manufacture of straw pulp.-A.P.-C.

H. — Bleaching, Bleach Manufacturing and Equipment

H-1 Determination of the Available Chlorine in Hypochlorite Bleaching Solutions. J. ROYER. **Ann. Fals.,** xv, 146-148, (April-May 1922). The method of Pontius is recommended as being rapid and exact. It consists in titration with a solution of potassium iodide after the addition of sodium bicarbonate. At first the iodide is oxidized to iodate by the free chlorine, but as soon as this reaction is completed the next drop of iodide solution reacts with the iodate and iodine is liberated and detected by means of starch.-A.P.-C.

H-5 Method of and Apparatus for Bleaching Paper Pulp. W. H. SALMON. Eng. patent 178, 209, Jan. 14, 1921. The removal of liquor from bleached pulp is accelerated and pulp of a more uniform color is obtained by subjecting the underside of the partially drained stuff to the action of a vacuum. The draining chest is fitted with a tiled false bottom and means are provided for exhausting the air from the space between this false bottom and the true bottom.-A.P.-C.

H-5 Alkaline and Acid Bleaching. HOTTENROTH. **Zellstoff u. Papier,** ii, 6-8, (1922). Translation by J. L. Parsons in **Pulp and Paper,** xx, 831-833, (Sept. 28, 1922). See this journal, xx, 504 June 15, 1922.-A.P.-C.

K. — Paper Manufacturing and Equipment

K-1 K-7 Green's Standard Pulp Sheet Mould. Paper Mill, xlv, No. 34, 46, 52, (Sept. 2, 1922). An upper chamber is hinged to the main body of the instrument and can be clamped down tightly against a gasket. Between the main body and the upper chamber is inserted a standard perforated copper disc (625 holes, per square inch). The instrument to a levelled, the upper chamber is clamped down, water is introduced to a level of about 1 inch above the disc (a stopper being inserted at the bottom of the draft tube), a measured quantity of stock at a consistency of 0.5% is poured into the upper machine chamber, after a few sconds (to allow the eddies to die down) the stopper is removed, and the sheet is formed. The disc is removed, and the sheet is dried without being couched from the disc. -A.P.-C.

K-7 New Style Breaker Beater. Paper Mill, xlv, No. 30, 4, (Aug. 5, 1922).A brief description of the Shartles breaker beater, which has a capacity of 50 to 150 tons per 24 hours, and of its merits particularly for the treatment of baled stock.-A.P.-C.

K-8 Application of Direct Dyes in Coloring Paper. WALTER C. HOLMES, E. I. du Pont de Memours Co. **J. Ind. Eng. Chem.,** xiv, 958-960 (Oct. 1922). With paper materials in general, the best results in dyeing direct dyes in sized papers are obtained when provision is made to insure maximum retention in the form of dye and the precipitation of residual color in the form of some lake other than the aluminum lake. The color should be dyed with salt, the amount of alum used reduced to a minimum, and the definition of alum preceded by that calcium chloride or other suitable metallic salt which will precipitate a lake of comparatively desirable characteristics. With groundwood furnishes best results are obtained if the absorption of the dye is prevented entirely by preceding the addition of the color by that of the metallic salt which is most suitable. In the dyeing of mixed furnishes contaning groundwood the same principles of color application should be followed in conjunction with the customary provisions for insuring uniformity of coloring. The methods outlined will increase the brightness of the dyeings without incurring the disadvantages attendant upon the use of basic dyes in conjunction with direct dyes. By means of the employment of copper sulphate in the case of numerous individual dyes and dye combinations a considerable range of shades of great fastness may be obtained.-A.P.-C.

K-8 The Coloring of Paper Stock. EMIL HEUSER. **Papierfabr.,** xx, (1922). Translation by I. Ginsberg in **Paper Trade J.,** lxxiv, No. 26, 44-45, (June 29, 1922). A discussion of the effects of sizing, softness of water, fillers, and fiber composition on coloring. Rosin size and sulphate of alumina act favorably, but salt cake does not. Hard water does not greatly affect aniline dyes, but excessive amounts of magnesium salts may form lakes (especially with acid substantive dyes) which have a dull tone and cause irregular coloring. Of the usual fillers, the acid silicates absorb best the basic and substantive dyes and only much smaller amounts of the acid dyestuffs; while barium sulphate was found to absorb color worst. It appears that only basic and substantive dyes possessing complicated molecular structures will give fast colors with the acid silicates. Combined coloring and loading by means of aluminum, calcium and magnesium silicates was successfully carried out by adding the dye, then a solution of waterglass, and precipitating the latter with sulphate of alumina or of magnesia, calcium chrolide, etc.-A.P.-C.

K-12 The Wear of Paper Machine Wires. V. BOUYER. **Mon. Papeterie Française,** liii, 391-393, (Aug. 15, 1922). Brief discussion of the most frequent causes of wear of paper machine wires.-A.P.-C.

K-23 Process for Stiffening Paper. F. POLLAK. Eng. patent 157-146. Aqueous solutions of the condensation products obtained by the action of formaldehyde on urea or its derivatives, including thiourea, with or without the addition of borax, are used as stiffening agents; e. g., the material is impregnated with a 5 to 10% solution of the condensation product, and, after exposure for a quarter of an hour to dry steam to remove the excess of water and formaldehyde, is ironed. Coloring agents can be added if desired.-A.P.-C.

K-12 Paper Making Machinery. W. C. WITTAKER. **Paper Mill,** xlv, No. 2, 20, 22, 40, 42 (Jan. 14, 1922). Suggested improvements in the design of paper machines, including standardization, elimination of surplus rolls, use of ball bearings, arranging wires and felts in positions which are easily accessible for changing, device for mechanical handling of rolls, accessibility to working parts especially on the driving side, height of paper machines, and improvements to the machine room.-A.P.-C.

K-12 Method of Determining the Deflection of Paper Machine Rolls. HARRY LUNDWALL. **Paper Mill,** xlv, No. 14, 126, 128, 130 (April 15, 1922). The author shows how to calculate the deflection of the various rolls (breast, table, couch, press, dryer) on a paper machine, and compares the deflections of the main rolls of a 165- and of a 250-inch machine. He shows that the problems of deflection should not limit further increase in the width of the Fourdrinier paper machine, but that the problem should be treated with the most careful exactness if best results are to be obtained.-A.-P.-C.

K-12 Paper Drying Troubles. GEO. D. KILBERRY. **Paper Mill,** xlv, No. 23, 4, 30, (June 17, 1922). The steam circulation system for paper machine dryers should be independent of the syphons for removing condensate, and means should be provided for feeding live steam into the flow of steam through the dryers from the tending side at any joint desired. The syphons from all the dryers can be at the back side and can deliver into the same header that is used as a return header for the steam from the respective dryers. More efficient syphoning is obtained by allowing a stream of cool water to flow constantly around the syphon pipe.-A.P.-C.

K-23 Impregnated Paper and Process of Making Same. LABORATORIO PRODOTTI SPECIALIZZATI "ROGNONE". Fr. Patent 523,545. **Chimie et industrie** vii, 1184 (June 1922). Ordinary paper is dipped in solutions of gelatin and of glycerin at 60 to 70°C., to which has been added a solution of saponified oleic acid. It is then dipped in a solution of formaldehyde and dried at the ordinary temperature. The resultant paper is waterproof and is unaffected by alcohol, ether, chloroform, and benzene; it resists the action of both high and low temperatures, is intiseptic and has a high tensile strength.-A.P.-C.

K-23 Impregnation of Paper or Cardboard. EXPORTINGENIEURE .FUR .PAPIER .UND .ZELLSTOFFTECHNIK. Eng. patent 169, 676. Materials such as paper or cardboard which it is desired to impregnate with animal size, casein, varnished, collulose solution, asphalt, etc., are left in the impregnating bath, maintained at 40°C until they are completely saturated, in the form of a continuous web. The material, supported by, e. g., felts, s reeled up in the bath. The impregnated material, after removal of the surplus impregnating solution, is sprayed, painted, or otherwise treated with hardening agents, e. g., formalin, and is then stacked, reeled, or piled, so that the hardening agent permeates and hardens the whole of the impregnated material. The resulting product is impervious to grease and water, and resembles in its mechanical properties leather and gutta-percha.-A.P.-C.

K-0 Making Cleaner Paper. EARL DEWEY. **Paper Ind.** iii, 729 (Aug. 1921); **Pulp and Paper** xx, 857 (Oct. 5, 1922). A brief outline of the various ways in which dirt can get into paper through carelessness.-A.P.-C.

K-0 The Native Paper Industry of Western China. H. K. RICHARDSON. **Chem. Met. Eng.** xxvii, 254-257 (Aug. 9, 1922). A description of the manufacture of "Kon Pi Chih" or bark paper which is made from the paper mulberry, rice paper, so called, which is sliced from a pit, "Ts' ao Chih", or coarse paper, made from rice straw or reeds, and "Chuh Chih", or bamboo paper, made from young bamboo trees.-A.P.-C.

M. — General Equipment

M-0 Advantages of Metallic Packing on Paper Mill Equipment. CHARLES C. HALL. **Paper Mill** xlv, No. 23, 14 (June 17, 1922). The author discusses the merits of "Durametallic" packings, more particuarly as regards their resistanc to the action of alum, acids, alkalies and superheat.-A.P.-C.

N. — Power Generating and Equipment

N-4 Economizers, Feed Water Heaters, Superheaters, and Air Preheaters for Paper Mill Power Plants. F. W. SCHAPHORST. **Paper Trade J.** lxxiv, No. 10, 24-38 (March 9, 1922). A description of economizers, feed water heaters, superheaters and air preheaters, their functions and construction; with a discussion of their merits and demerits and a description of various types on the market.-A.P.-C.

N-4 Stokers, Draft Regulators, Furnaces and Ash Handlers for Paper Mill Power Plants. F. W. SCHAPHORST. **Paper Trade J.** lxxiv, No. 24, 24-38 (June 15, 1922). A general description of the various types of stokers, etc., with a discussion of their relative merits.-A.P.-C.

N-4 Boiler House Control. B. M. LITTLEFIELD. **Paper Trade J.** lxxiv, No. 26, 41-43 (June 29, 1922). A discussion of the importance of a proper control of fuel (kind, grade, rate of firing), water (temperature, quantity), air (temperature, quantity), steam (quantity, temperature, pressure), flue gases (temperature, quantity, CO_2, combustible gases, excess air), ash (quantity, analysis).-A.P.-C.

UNITED STATES NOTES

Officers and enlisted men at the Army Base, South Boston, are wearing paper coats sold in Germany for twenty cents, United States money. These coats are of differents colors, the predominating color being blue. They are worn over a sweater, and otherwise make good smoking jackets. Col. H. G. Doyle who brought a number of them from Germany pronounces them warmer than woolen coats.

A recent Young Men's Christian Association convention at Atlantic City was presided over by Judson G. Rosebush, head of the Patten Paper Company of Appleton, Wis. The gathering was an international convocation and drew more than 6.000 visitors and delegates from all parts of the world.

Due to the effectiveness of frequent fire drills, two hundred employees of the Robert Graves Company, manufacturers of wall paper at Brooklyn, N. Y., marched safely from the company's building when it caught fire last Thursday. The damage was slight as the flames were quickly put under control.

A new issue of $800,000 of first mortgage bonds of the Bedford Pulp and Paper Company of Big Island and Coleman's Falls, Va., is being offered by Ames, Emerich & Co., New York, at 100 and interest to yield 6.50 per cent. The bonds will be secured by a direct first mortgage on all fixed assets of the Bedford Pulp and Paper Company, Inc., and the General Paper Company, Inc., and the entire capital stock of three subsidiary concerns. Proceeds of the issue will be used for the acquisition of the entire capital stock of the General Paper Company, Inc., for the retirement of bank indebtedness and to provide for the development and extension of operations.

R. A. Lundquist, special investigator for the Department of Commerce, has returned from a trip through Europe. He reports a general business depression in the Northern countries, particularly in Sweden, Mr. Lundquist says this depression in Sweden is due in part to the fact that important Swedish products, such as lumber, paper and steel are moving very slowly in the face of competition from Norway, Finland and Germany, whose depreciated currencies give them a more favorable position in the world trade in these lines. Direct competition from German manufacturers within Sweden itself has also been felt by Swedish manufacturers to a small extent.

A hydraulic power company at Weymouth, New Jersey, which recently acquired titled to an estate including old paper mills and a score or so of adjacent dwellings, is letting the houses to tenants at a rental of only ten cents a month. Tenants had lived in these houses for many years, some for a lifetime and others for so long that they had come to regard them, in a way as their own. The new owners of the property, not wishing to disturb the tenants, but finding it legally necessary to charge a rental in order to protect their title, fixed the rents at ten cents a month and leases to this effect were duly drawn and executed. Under the terms of the leases the tenants are permitted to cut all the firewood they need for their own use.

Representatives of the National Association of Manufacturers and of forty-one other manufacturers' organizations appeared last week before a sub-committee of Congress to oppose enactment of the Hull bill which would require the Government to manufacture in arsenals and Navy Yards all articles required for its use. The manufacturers contended that the bill would put the Government in competition with private business on an unfair basis because the navy yards and arsenals would work without taxation and overhead charges.

An interesting article on new sources of raw materials for paper making appears in the current issue of the Journal of Industrial and Engineering Chemistry. The article is by Clarence J. West, and it tells of progress up to the present time in research aand experimentation with bamboo, cotton linters, grasses, etc. as possible substitutes in making pulp for paper.

The Cellulin Corporation, Milwaukee, Wis., is planning to erect a factory for the manufacture of cellulin, a transparent cellulose sheeting which is said to be thin and flexible like tissue paper with the transparency of glass. The now product will be manufactured in various thicknesses, the lightest being 1/100 of an inch. It will be marketed wound in rolls so that consumers can cut it any length desires. Cellulin, according to the company's announcement, is not affected by acid, alkali or oxidizing agents of ordinary concentrations. It does not burn as readily as paper and the heavier grades are admirably adaptable for moving picture films, being non-inflamable. One grade of the factory's output for a period of two years is already sold, it is said.

John J. White, General Manager of the Whitmore Manufacturing Company, Holyoke, was chosen to head the new Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association at the organization meeting held recently in Holyoke. Among the notables of the industry present for this occasion were, John H. O'Connell, president of the Association; President George A. Galliver of the American Writing Paper Company and E. T. Coughlin of the Allied Paper Mills, Kalamazoo, Mich. Mr. Galliver spoke about the present condition in the industry and the promising outlook for the coming year.

The Paper Division of the Bureau of Foreign and Domestic Commerce will lose the services of Constant Southworth as Assistant Chief at the end of this month. Mr. Southworth, who has been with the division since its organization, has resigned to become associated with the Carnegie Foundation's Institute of Economics.

ENGINEERING SERVICE OFFERED BY CARTHAGE COMPANY

Mr. A. K. Hinds, an engineer with several years valuable experience in the construction and equipping of paper, sulphate and ground wood mills, formerly associated with George F. Hardy of New York, for several years in charge of building and equipping some of the largest mills recently built in the East, has recently been appointted General Manager of Carthage Machine Co., Carthage N. Y.

The Carthage Machine Co. have an up-to-date organization and equipment for building of paper and pulp mill machinery, and have recently formed an engineering department which is at the service of its Canadian patrons.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, December 5, — The paper trade has not shown any change of note during the past week. There is a fair amount of business passing, but none of the jobbing houses is doing what may be termed a rushing trade; it is rather of a steady character, without any outstanding features. Up to the present, the printers have not had anything like a good season; some have secured sizeable orders, while others have been slack. Prices too have been severely cut in the scramble to get whatever business has been open. This is nearly always the case where orders are scarce, the competition being generally set by the smaller houses.

We are now nearing the end of 1922, and looking back over that period, there is ample justification for the forecasts of a revival in all branches of the paper trade. While there has been nothing in the shape of a runaway market, prices have strengthened and the volume of business has increased very perceptibly. In one or two directions there has been considerable activity. The better prices obtained have not been all profit, as against the increases must be set the higher cost of raw materials.

The demand for newsprint continues good. The consumption is ever mounting up; in October it reached, in the United States, the highest yet known. Newsprint is being produced to capacity in this country, and is being shipped out as fast as the car service will permit. In the case of one mill which will commence operations in a few weeks, the output of 1923 has been contracted for, and appearances indicate that there would be a ready sale for many more tons than will be constructed in this probable that another mill be constructed in this provprovince during the eaarly part of next year.

In other sections of the paper trade, a moderate business is being done. Book papers, writings and bonds are in steady demand, with, however, the bulk of the orders for the medium grades. Tissue and toilet mills still keep busy, and in some lines their deliveries are behind. The board manufacturers are working pretty fully, although the demand for the Christmas trade is pretty well over.

The pulpwood market is firm. Groundwood is in as strong demand as ever, the poor water conditions making for the continuance of the higher prices. The quantity on the open market is limited, and finds ready buyers. Kraft pulp remains good, but there has been a lull in unbleached sulphite with a slight recession in the call for bleached sulphite. This is quite usual, as consumers are desirous of keeping down their inventories at this period of the year.

The pulpwood market is livening up. The demand has improved, and with it prices have strengthened. There are a fair number of orders to be executed, but the pulpwood companies are feeling the pinch of a shortage in cars.

Toronto Market News

The Ontario pulp and paper trade is beginning to evidence signs of the seasonable quiet which usually comes as the season for inventory and stock taking comes on. Many firms, both distributors and manufacturers are already preparing to take a survey of the year's operations and in another few weeks they will be at it. In the meantime they are anxious not to have heavy stocks during the period of inventory taking and this in turn means that from now until the end of the year and a little after there will be a seasonable slackening in the volume of business. The trade, however, is in a satisfactory condition and the market in most lines of pulp and paper is fairly well stabilized. An evidence of this was seen last week when it was announced that manufacturers of flat papers, books, bonds, writings etc., are now quoting firm prices. That is to say the old clause "at prices prevailing at time of shipment" is now eliminated and the customer can now place his orders and get his supplies from the mills who are delivering paper at the price at which it is booked rather than what it might be at the time of delivery. This has further tended to stabilize the market and makes paper transactions much more satisfactory to the distributors.

PULP.— The market for pulp of all lines continues steady although there is a disposition to halt buying to some extent and to reduce existing stocks. These have become somewhat heavy in some cases and it is generally believed that during the next three or four weeks there will be a slight slackening in demand, with a resumption of buying in January. In the meantime it is believed that the market will remain firm. Prevailing quotations are: bleached sulphite, $85 to $100, f.o.b. shipping point; unbleached, $55 to $75; news grade around $55, and sulphate $62.50 to $65. Groundwood pulp ranges from $35 to $40 but it is understood that some has been bought at slightly below those figures.

KRAFT.— The consumption of kraft is increasing by leaps and bounds, according to manufacturers, and distributors and mills are all busy. Competition from the Scandinavian countries is being overcome and it is claimed that it will eventually be entirely eliminated by the excellent product being turned out by the Canadian mills. Recent advices are to the effect that prices for both kraft paper and kraft pulp are improving in Europe and this is having a favorable reaction on the Canadian market in the way of reducing Scandinavian competition. For the most part the advantages of the Canadian product is being realized. One consumer pointed out that while at times the price quoted by European mills was attractive it was more than offset by the fact that the goods had to be paid for before they reached this country and that by the time the various charges were met the Canadian-made product could be placed in stock, with infinitely less trouble and at as satisfactory a price. Kraft paper is selling at 8.c delivered for M. F. and 8.15 for M. G., while kraft pulp is quoted at $72.50 f.o.b. mill.

BOOK PAPERS.— The upward trend of book papers was indicated this week when one of the big mills made an upward revision of its price lists in respect to several of its lines. It was pointed out that the revised price list was in order to bring the quotations in line with the prices of other book paper manufacturing concerns which had been increased some little time ago. There is a steady demand for book papers and mills have orders ahead.

TISSUES AND TOILETS.— There is a satisfactory demand for toilets and tissues and all light weight papers and the mills are running to capacity with orders booked ahead and with prices holding firm. There has been a splendid sale of crepe tissues in reds, whites andgreens for the Christmas trade. Some export business is being done with New Zealand and South Africa but it is somewhat limited on account of world competition and is not being actively pushed by Ontario manufacturers.

WRAPPING PAPER AND PAPER BAGS.— Fair requisitions are coming through from distributors for these lines and the mills are fairly busy. Jobbers, however, report that while many orders are being placed, they are of rather small dimensions, indicating a cautious policy on the part of the consumers. No changes in prices have been effected of late.

NEW YORK MARKETS

New York, December 2 — (Special Correspondence) — The market for paper continues fairly active and the industry as a whole is showing a healthy condition. Reports tell of mills running at a good rate of capacity— some groups of mills are operating at full production— and manufacturers seem to be experiencing no great difficulty in finding a ready outlet for their output. In fact, production is being kept down just at present simply to cover actual requirements, this being the season of the year when papermakers endeavor to reduce stocks of their finished product as well as raw material in preparation for inventories. Moreover it is generally acknowledged that manufacturing operations are at present netting proportionately more profit than in a couple of years. Raw materials of many kinds have receded somewhat in price, thereby reducing the cost of production to a sufficient amount at least to give manufacturers a little better profit on their finished product. The industry as a whole is marked by comparatively satisfactory activity and with a healthiness of tone which seems to promise much for the approaching new year.

The Federal Trade Commission's report on the print paper industry for October shows that an increase in newsprint production occurred in that month over September. During October, the report states, producing of total newsprint amounted to 130,682 net tons, compared with 125,402 tons in the preceding month, 101,884 tons in October a year ago, 124,818 tons in October two years ago, and 125,216 tons in October three years ago. Of the total production of print paper in October last, 119,984 net tons were standard news, contrasted with an output of 115,899 tons in September this year, 93,489 in October, 1921; 114,232 tons in October, 1920; 110,902 tons in October, 1919, and 94,330 tons in October, 1918. The report shows that production of total newsprint in October was 14 per cent. above the average monthly output based on reports covering the past five years, and of standard news 16 per cent. above an average. October output compared with that of the same month a year ago showed an increase of 28 per cent. for both total newsprint and standard news.

Mill stocks of print paper increased slightly during October from 18,810 net tons of total newsprint at the beginning of that month to 19,745 tons at the end of October, and from 14,687 net tons of standard news at the start of the month 15,468 tons at the end of the month.

The market position of newsprint is strong to an extreme. Ordinarily the announcement by manufacturers that they would reduce prices on a given date ahead, such as the reduction announced to become effective on January 1, would cause consumers to hold back in buying. Just the opposite is the case in this instance, however. Publishers are looking in various directions for additional supplies of paper and are freely absorbing any lot of newsprint found available for prompt shipment. Indications are that the average publishers has set a limit on his consumption of paper for the present and is adhering strictly to this limit, presumably in the fear that if his consumption is not watched closely he may run short of paper. Proof of this seems to be had in the fact that newspapers in New York are leaving out columns upon columns of advertising from nearly every issue they print. Morning and afternoon dailies in this city and elsewhere are printing announcements daily stating that from five to thirty columns of advertising have been omitted because of lack of space. This means evidently that a great deal more newsprint would be used at present if the paper was available.

There is a steadily improving situation in book paper. Demand is gradually expanding and mills are called on to work faster to fill the wants of customers. Prices of book paper show a stiffening tendency, and coated book is advancing, owing in part to the excessively high cost of casein. Since the import duty of 2½ cents a pound was imposed on this article, and since the use of powdered milk has become an important factor in curtailing the production of casein, available supplies of this product are short and prices are jumping at a rapid rate, some importers reported asking as much as 20 cents a pound for Argentine casein. Machine finished book paper is quoted te around 7 cents a pound f.o.b. New York, and coated book paper at an average og 9.50 cents. Super book is quoted at about 7.25 cents for an average quality paper.

Wrappings are moving actively and at steady prices, and there is a good demand reported for tissue papers. Fine papers are enjoying a splendid demand at firming prices. Box boards are quieter, which is a seasonal development in this branch of the industry, but quotations have not been altered as yet. Manufacturers continue to quote $60 on plain chip and $62.50 a ton on filled news board, and while some buying is proceeding at a little under these levels, no concerted movement to reduce prices has been made.

GROUND WOOD — Quotations on mechanical pulp are maintained and there has been business reported at new high prices for the present movement, yet just at the moment the market displays a little softer tone. Early in the week it was reported that prime spruce ground wood had been sold in excess of $40 a ton at pulp mills, one large pulp concern in New York reporting a sale of 2,000 tons at $42.50 f.o.b. grinding plant, but since then demand has dropped off somewhat and the uptrend in prices appears to have been checked. The reason for the easier undertone is said to be nothing else than that water conditions in Wisconsin have improved sufficiently to enable grinders in that section to resume operations on a larger scale and thus supply consumers in the same territory, thereby causing western buyers to withdraw from the eastern market. Current prices range around $40 a ton at grinding plants, and indications are that there is a ready outlet for all the ground wood sellers have to offer. Imported mechanical pulp continues to be quoted at $40 to $41 per ton ex dock New York.

CHEMICAL PULP — The quieter condition in the chemical wood pulp market continues and while quotations are maintained in most quarters, some lots of pulp are being offered at slight concessions. For example, Scandinavian kraft of an inferior quality has been reported offered on the spot at an Atlantic port at 2.75 cents per pound ex dock, and even No. 1 foreign kraft is reported available at 2.85 cents on the dock. Foreign bleached sulphite of strictly No. 1 grade is quoted at 4.50 to 4.75 cents, and it is understood that most sales at present are at the lower figure, while No. 1 imported unbleached sulphite is quoted at around 2.90 cents per pound ex dock at this port.

Domestic pulps show little change in price. Producers with few exceptions have their output for the balance of the year sold and are therefore working to fill existing commitments without having to worry about current market conditions. Moreover, it is felt that the movement of foreign pulp from Sweden to this country will have slowed up by the turn of the year, thus creating a larger demand for domestic fibre, which it is believed will more than hold up prices during the winter.

RAGS — There is not much activity of an important character in the papermaking rag market. The movement of rags stock is mainly of routine scope, with consumers coming into view as buyers at this time only when actually and immediately in need of supplies. Some grades, notably new cuttings, are in fairly good demand and quotably steady, but other grades and especially the bulky descriptions are largely ignored by buyers, with prices on these kinds of rags exhibiting a downward trend.

Dealers place much emphasis on the high prices demanded by clothing manufacturers for cotton cuttings. The sharp advance in raw cotton and resultant high prices prevailing on cotton piece goods prompt clothing producers to ask proportionately as high rates for their cuttings, and dealers say that every time they seek to buy additional lots of cuttings they are obliged to pay advanced prices. Papermakers are absorbing these rags freely whenever found available within reasonable price limits. Old rags, on the other hand, and dull, and roofing stock is in very nearly a dormant position. Offerings of No. 1 roofing rags at $1 a hundred pounds f.o.b. New York are reported and of No. 2 packing at 90 cents, and it is stated that mills have bought in some instances at below these figures. Repacked thirds and blues are quoted at around 2 cents per pound, and miscellaneous packing of the same rags at 1.50 cents New York.

PAPER STOCK — Trading in old paper has apparently involved slightly larger quantities this week. Some mills have been more actively in evidence as buyers, and while prices have undergone little or no change, it is apparent that the downslide of values has been checked, temporarily at least. If anything, the higher grades are commanding slight advances from last-reported prices. Old magazines have firmed, and dealers in New York want at leaast 2.50 cents per pound for No. 1 heavy magazines f.o.b. this city, and about 2.10 cents for mixed books. Hard white shavings of No. 1 quality are quoted between 4.25 and 4.50 cents per pound New York, No. 1 soft white shavings at 3.60 cents, and ledger stock around 2.80 cents. Old folded newspapers are selling with greater freedom at $1 a hundred pounds, or a shade under that figure, and No. 1 mixed paper at 77½ to 80 cents a hundred pounds New York.

OLD ROPE AND BAGGING.— Old rope is moving in a steady way and at stationary prices, between 5.75 and 6 cents a pound at dealers' shipping points being the quoted range at present, with most mills said to be granting the higher figure. Old bagging is in routine call, with tissue paper manufacturers offering about 1.25 cents a pound New York for No. 1 light scrap bagging, and bag paper mills paying between 1.10 and 1.15 cents for their quality of No. 1 scrap. Roofing bagging is offered at 75 cents a hundred pounds and less and is largely neglected.

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THE PRICE OF HUMAN SAFETY

By CLYDE LEAVITT, in Canadian Forestry Magazine

It is an old saying and a true one that in a democratic country, a law, to be effective, must reflect the moral sense of the community as a whole. Conversely, no law which does not reflect the general moral sense of the people can be adequately enforced.

Has not the application of this truism a bearing upon the catastrophe which overtook Haileybury and the surrounding district on October 4 resulting in the destruction by fire of some forty-four lives and of property valued at around eight million dollars, to say nothing of several thousand people rendered homeless at the beginning of northern winter?

In the Forest Fires Prevention Act of Ontario is a clause establishing a close season for the setting out of fire, within the Fire Districts, from April 15 to September 30 of each year, and providing that within a Fire District, permit areas may be set aside, within which, during the close season, no fire shall be set out for clearing land, disposal of debris or inflammable waste, or for any industrial purpose, except upon written permit from the fire ranger or other authorized official.

The Fire Districts were defined in the law, and the Permit Areas were duly established by Order-in-Council, the district around Haileybury, North Cobalt, Charlton, Englehart etc., being included in both.

Settlers' Fires the Great Menace

In the North Country, fires escaping from settlers' clearing operations constitute probably the predominant element in forest fire losses. The country is comparatively newly-settled, the bush is a terrific obstacle to cultivation, the amount of inflammable slash left from logging and land-clearing operations is great, and the cost of outside labor for clearing is prohibitive, even had the settlers the money to pay for it. A very general feeling appears to exist that the only practicable way by which the country can be opened up and reduced to possession for agricultural purposes is by the liberal use of fire. Thus, the terrible fires of 1911 around Cochrane, and of 1916 around Matheson were by many regarded as substantially forwarding the process of settlement, although of course the loss of life and of improved property were most sincerely regretted. Both these were essentially bush-fires, which the fire of October 4th was not.

Fires escaping from settlers' clearing operations during protracted periods of dry weather, coupled with high winds, were a large factor, though not the only one, in initiating these destructive conflagrations. In these cases, like that of the Haileybury-Englehart fire of this year, the highly inflammable character of the soil itself contributed largely to the rapid spread of the fire. Throughout the Claybelt, the mineral soil is covered with a heavy layer of vegetable matter, of a peaty formation, which is very inflammable when dry. In many sections, this layer of vegetable matter is so thick that it is a common practice for settlers to burn off the top portion, so that the plow may be able to cut through to the clay beneath and cause a highly fertile mixture of the two classes of soil. If the upper or vegetable layer is burned too deeply or too severely, the fertility of the soil is destroyed or rendered merely temporary. Enormous damage to soil values in the Claybelt has been caused in this way.

Undoubtedly it was the inflammable character of the soil itself which is largely responsible for the terribly wide and rapid spread of the fire between Haileybury and Englehart, where the forest has very largely disappeared and the country has more of an open or prairie aspect. It is this same character of the soil which must be taken very carefully into account if future recurrences of past catastrophes are to be avoided.

It remains true nevertheless that public opinion in the North Country has always regarded the free use of fire as essential to the clearing away of the forest debris and to the preparation of the soil, preliminary to cultivation.

The Permit System

As a result of the general sentiment adverse to restrictions upon the conduct of burning operations, a resolution was passed at the annual meeting of the Temiskaming County Boards, asking the Provincial Government to withdraw the fire-ranging staff from the organized townships, including the territory between Haileybury and Englehart. This action was taken, thus in effect repealing the permit system of regulating settlers' clearing fires in that section. Now, after the event, this unfortunate state of public sentiment and the action resulting from it, appear in the light of a terrible and fatal mistake, which obviously should be rectified.

Throughout the permit areas of Ontario generally, as well as in other provinces and in many of the States of the Union, the permit system of regulating clearing fires has worked splendidly, and has been a tremendous factor in reducing the losses by forest fires, although, as might be expected, local difficulties are met with in some cases, particularly at the beginning.

The permit system is not an absolute cure-all, and fires still occur to some extent where it is in effect. The fire-ranger may use his best judgment in issuing permits, and unusual weather conditions may still neutralize his efforts and result in the spread of fire. However, all experience proves that the permit system constitutes a precautionary element of safety which no new settlement in a forest section can afford to be without.

According to press reports, fires had been smoldering for weeks prior to the disaster, in the territory tributary to a line between Haileybury and Englehart.

Under normal conditions, such fires would not seriously menace life and improved property. However, as past history in the North Country demonstrates, periodically, perhaps once in five or six years, normal weather conditions do not prevail, but, on the contrary, the period of drought becomes unusually protracted, whether in spring, summer or fall, high winds spring up and the many small fires which may have been smoldering away more or less harmlessly, are driven together and become a raging conflagration which utterly destroys everything in its path. This was the history of the Cochrane and Matheson fires, as it is of the Haileybury-Englehart fire.

If conditions remain the same, is there any reason to doubt that there will be periodical recurrences of these catastrophes, until the North Country has been so cleaned off by fire that they will for that reason alone become impossible?

Fundamentally, it is a question of public sentiment. If the people in the North Country want immunity from periodical conflagrations of this character, they can have it or at least can come a good deal nearer to having it than in the past. But they must be prepared to pay the price. It is an old saying that one cannot eat his cake and have it too. The price to be paid is an uncompromising and overwhelming public sentiment against carelessness or recklessness in the use of fire, and in support of the fire-ranging staff in its efforts to render the country safe to live in, through the application of the permit system. It must be accepted as a matter of course that land clearing will have to progress somewhat more slowly. Fire must be relegated to its proper place of a good servant instead of a terrible master. Further, public sentiment must support still larger appropriations for the fire-ranging service, so that an adequate staff may be kept on duty, until the fire season is indubitably over.

Good Work of Forest Service

The annual appropriation for the Ontario Forestry Branch may appear large, and it is large, but in proportion to the enormous area which has to be covered by the fire-ranging staff, all past experience shows that it is still much too small. More money is needed for fire-rangers, for overhead supervision, for roads and trails, for aerial patrol, and for mechanical equipment such as telephones, radio, lookout towers, portable fire-fighting pumps, motor cars, canoes, launches, etc.

The forest revenues are large, and the Province can well afford this additional expenditure. It cannot afford to be without the protection which such an expenditure would ensure. In addition to the absolutely vital question of safeguarding life and improved property, there is the enormously important problem of conserving our supplies of pulpwood and saw-timber, which are becoming sadly depleted, the adequacy and continuity of which are of the most vital importance in the industrial life of the Province and of the Dominion as a whole.

The Ontario Forestry Branch has made great strides during recent years toward better forest protection. Statistics of appalling forest fire losses prove however that the facilities are not yet adequate by a wide margin. The fire-ranging service is not responsible for the Haileybury disaster, but its hands should be so strengthened that it will be in a position to enforce all reasonable precautions to prevent a recurrence, perhaps five or six years hence, perhaps next year or the year after.

This is a matter for the public conscience of the people living in the North Country and of the people of the Province as a whole.

What is the answer?

INSTALLING NEW MACHINE FOR BELGO

The paper mill at Shawinigan Falls which has always been referred to under the name of Belgo on account of the exceedingly long name it had, has now referred to as The Belgo Paper Co.

In spite of the change in name we find that there has been no change, the same people who were connected with the company before are still connected with same.

The Company constructed, last Summer, a building to house two paper machines. These machines are of a width of 230'' and we are told will operate at a speed of around 750 ft. per minute. One machine is just being installed; same is built by the Walmsley Co. and is driven by a sectional electric drive furnished by the Harland Engineering Co. This machine is expected to start operating in the early part of 1923.

When the new machine is in operation the newsprint production of the Belgo mill will be 280 tons per day. The Company has under consideration the installation of an additional machine during the coming year which will bring the ultimate production of newsprint paper to 360 tons per day.

The Belgo Paper Co. has, during last year, installed a very effective system of fire protection for its log storage in close proximity to the mill. This protective system has a capicity of 6000 imperial gallons per minute at a pressure of 150 lbs. Monitor nozzles are used for directing the jet of water to any point of the log storage pile. These monitor nozzles are located on galvanized steel towers or on the steel conveyor structure itself; they are so located that at least two nozzles, and in many places three, can be directed to any single spot of the log pile; this means throwing from two to three thousand gallons of water per minute at any concentrated point of the log pile. According to the Underwriters who have carefully tested this system they consider it is a very effective mean of fire protection.

THE NOVELTY OF THE DAILY TASK

Most of us get in a rut, of course any student of human nature will tell you that.

The real difficulty is not that things may not go reasonably smoothly in a rut, but that they don't get better or bigger.

The things we do repeatedly we are apt to do unthinkingly after a while, and the world demands improvement which only comes by thinking.

The need of most of us is to see the novelty in our daily task so that we may wonder at it and how to improve it.

We get used to it and are not conscious of it We don't think about it.

As for example:

There lived a man with a fine, long, wide, luxurious beard reaching nearly to his waist.

It was one of those beards we see in the country churches sometimes or in the family portraits unpopular in the shirt and collar trade.

Well, this gentleman, visiting a friend one day, was entertaining the little daughter of the family who, admiring the beard, asked him as one of a series of questions what he did with his beard at night.

He was stumped. He couldn't tell. He just wore it.

But that night he determined to discover.

First he laid it carefully outside the covers, but he felt as if he were laid out.

Then he tucked it under the covers but every time he moved, it pulled the skin on his face.

Next he tucked it inside his pyjamas. That didn't suit him because it tickled him.

So he sat up half the night trying to dispose of something he'd had for twenty years and slept with all that time.

It had grown on him and he was so used to it that he had worn it unconsciously.

Well, that's what happens to our work. We get too used to it.

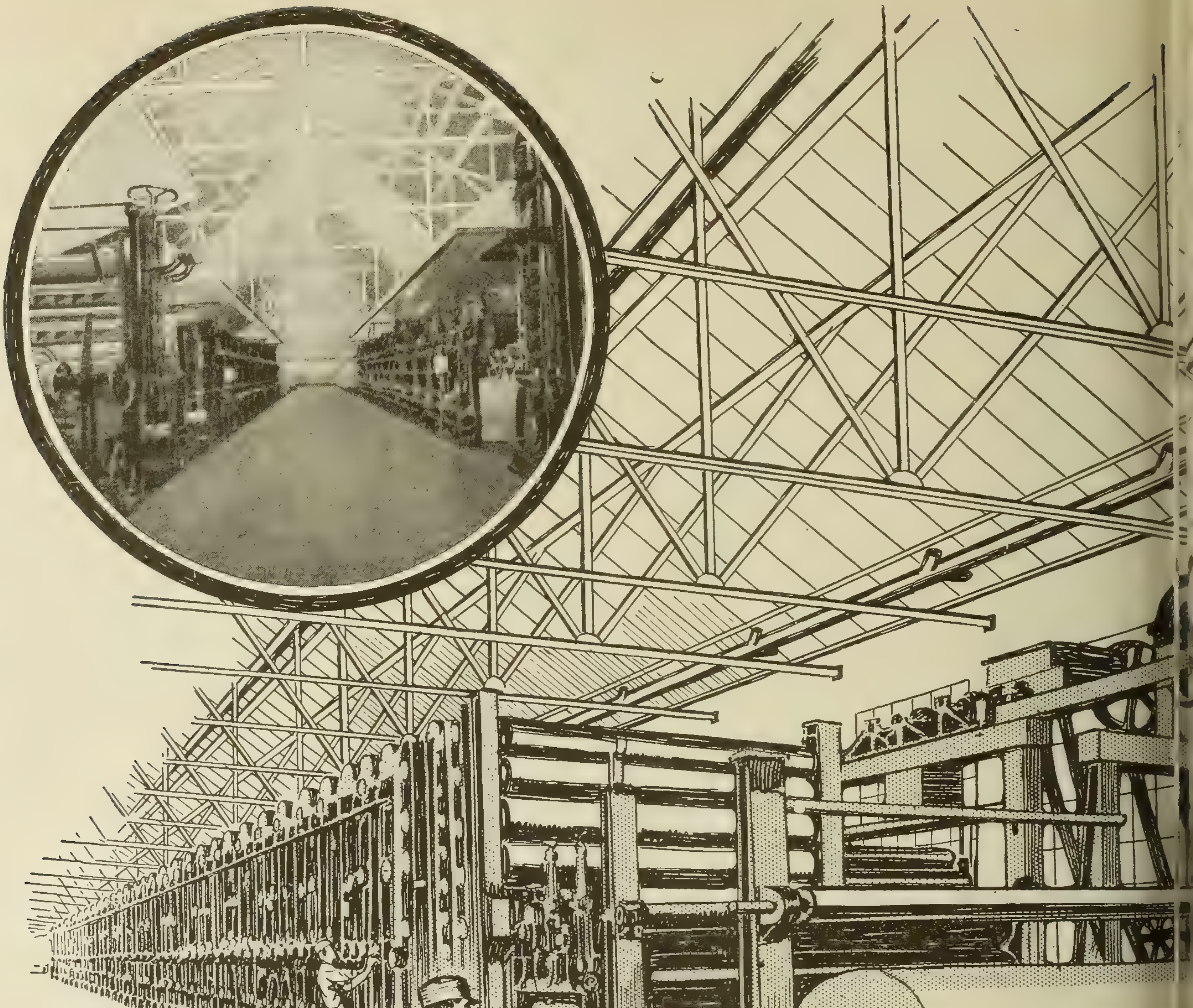
But there is a constant novelty in it.

Why wait for the other fellow to discover it and improve it?

—*Strathmorean.*

FINISH EACH DAY AND BE DONE WITH IT

Finnish each day and be done with it. You have done what you should. Some blunders and absurdities no doubt crept in; forget them as soon as you can. Tomorrow is a new day; begin it well and not with too high a spirit to be cumbered with your old nonsense. This day is all that is good and fair. It is too dear, with its hopes and invitations, to waste a moment on yesterdays. —Emerson.



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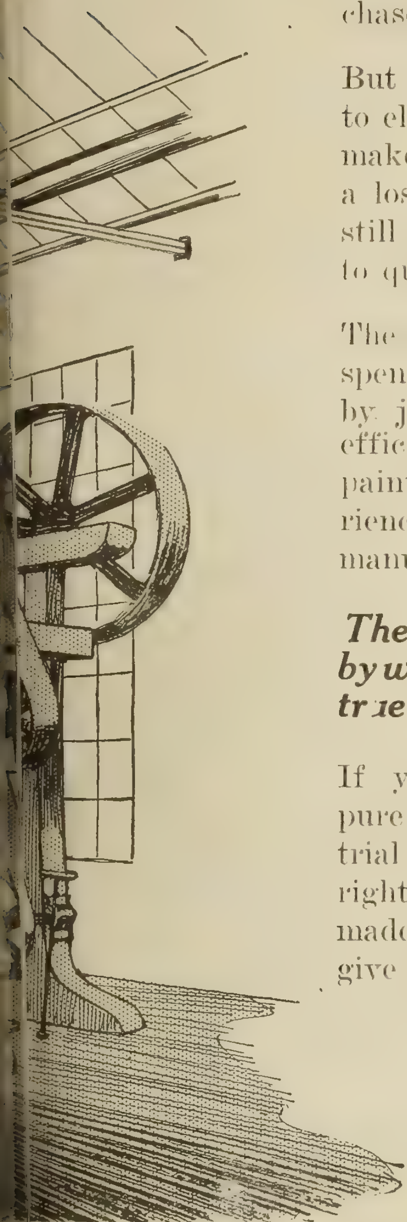

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There are times when every buyer feels that he must make a saving on his paint purchases.

But to avoid false economy — to eliminate the situation that makes for a saving today and a loss a year from now, it is still vitally important to look to quality.

The value of every dollar you spend for paint is determined by just two factors of paint efficiency—the records of the paint in service—the experience and reputation of the manufacturer.

These are the only guides by which you can judge the true worth of any paint.

If you buy **Sta-White**—the pure white oil paint for industrial interiors, you buy downright good paint. It is not made to sell at a price that will give you a false initial saving. No quality product is. It is made to fit a service. Its price per gallon is not high and its per year cost is always low.

You need not take our word for it that **Sta-White** will give you service, because it has a demonstrated value in the paper mill field that eliminates likelihood of failure. And back of it stands the reputation of the Dominion Paint Works Limited as makers of good paint over a long period of years. It is that, that constitutes a real guarantee.

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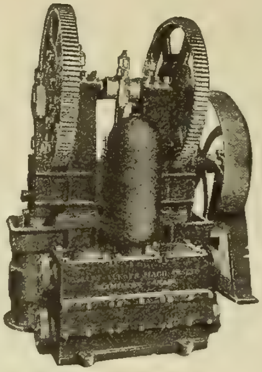

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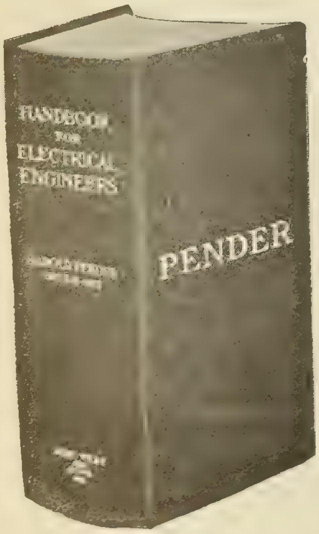

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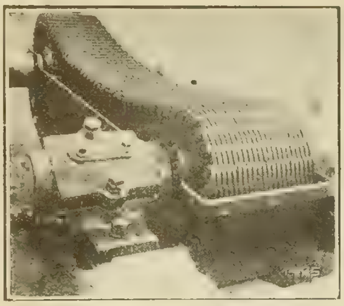

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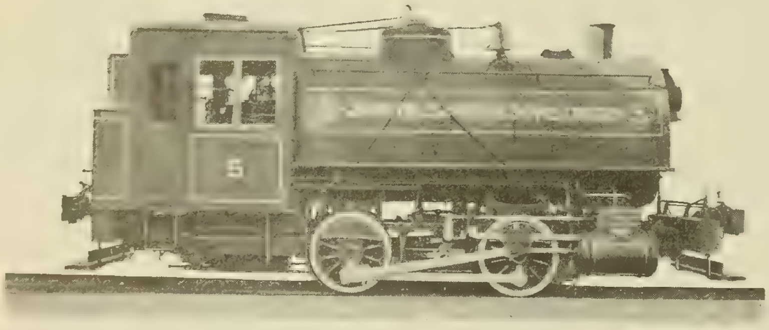

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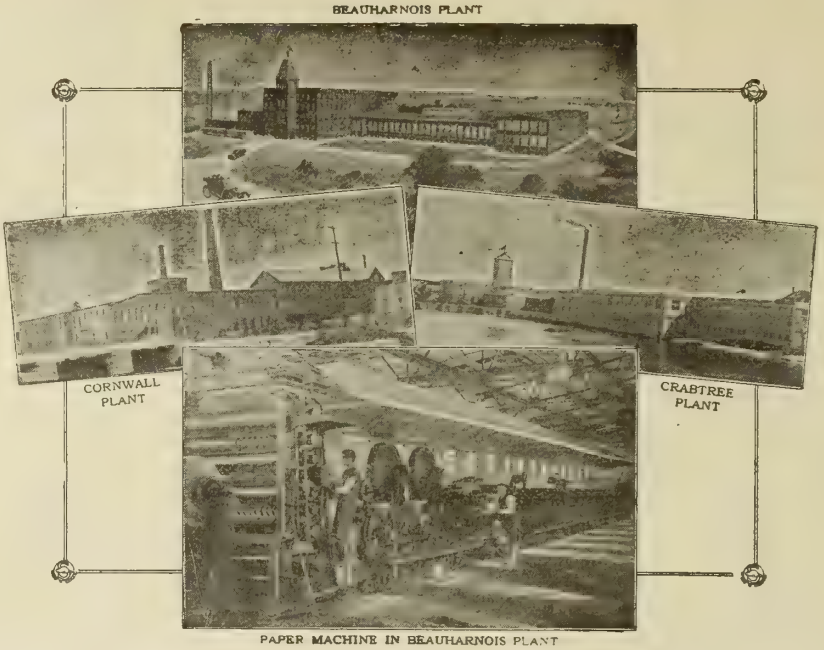

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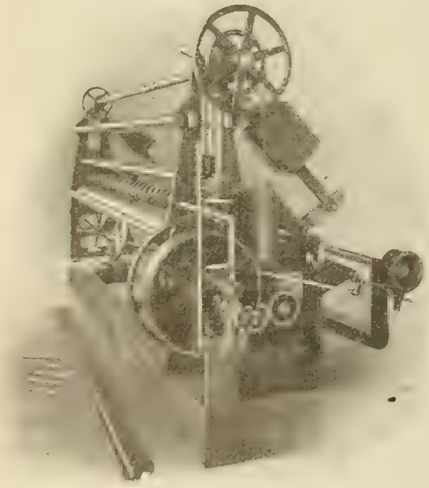

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Tippet & Co., Ltd.

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Carthage Machine Co.

Knives:

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Can. Des Moines Steel Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Carthage Machine Co.
Hamblet Machine Co.
Peter Hay Knife Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Waterous Engine Works Co., Ltd

Knives Paper Cutting:

Galt Knife Co., Ltd.
Hamblet Machine Co.
Peter Hay Knife Co., Ltd.
Pulp and Paper Mill Accessories, Ltd.
Reid, C. De Wolf.

Kollergangs:

Bertrams, Ltd.
Boving Hydraulic & Engineering Co., Ltd.

Lamps — Electric:

General Electric Co., Ltd.
Harland Enginering Co., Ltd.
Northern Electric Co., Ltd.

Laboratory Equipment:

Perkins, B. F. & Son. Inc.

Lath Machines:

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Lead Burning:

Barber, W. J. & Co.
St. Lawrence Welding Co.

Lead Goods:

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McAvity, T. and Son.

Lockers:
Canada Wire & Iron Goods Co.

Locomotives:

Canadian Equipment Co., Ltd.
Fraser & Chalmers, Canada, Ltd.
Jno. J. Gartshore.
Montreal Locomotive Works, Ltd.

Loggers:
Canadian Holt Co., Ltd.

Lubricants:
Imperial Trading Co.

Lubricating Graphite:
Dominion Paint Works, Ltd.

Lubricators:

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Imperial Trading Co.
McAvity, T. and Son.

Matches:
E. B. Eddy Co., Ltd.

Machine Tools:
Canadian Fairbanks-Morse Co., Ltd.
Victora Foundry, Ltd.

Mechanical Draft:
The Mason Regulator & Eng. Co. Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Meters — Steam:
The Bristol Co.
Foxboro Co., Inc.
The Mason Regulator & Eng. Co. Ltd.
Peacock Bros., Ltd.

Milk — Powdered:
Canadian Milk Products, Ltd.

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Canadian Fairbanks-Morse Co., Ltd.
Canadian General Electric Co., Ltd.
Harland Engineering Co., Ltd.
Northern Electric Co., Ltd.
Sturtevant, B. F. Co. of Canada, Ltd.

Mill Brokers:
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Gibbs-Brower Co., Inc.

Motor Drives — Individual, Sectional:

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Can. Westinghouse Co., Ltd.
Harland Engineering Co., Ltd.

Oil:

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Oxy-Acetylene Welding and Supplies:

Walsh Plate & Structural Works, Ltd.

Packing:
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Canadian Fairbanks-Morse Co., Ltd.

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Beveridge Supply Co., Ltd.
Dominion Paint Works, Ltd.
McArthur, Irwin, Ltd.

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Canada Wire & Iron Goods Co.

Pinions:

Hamilton Gear & Machine Co.

Pulp Stones:

American Stone Co.

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Rolland Paper Co., Ltd.

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Provincial Paper Mills Co., Ltd.
Rolland Paper Co., Ltd.

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Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co.
Canada Paper Board Co.
Eddy, E. B. & Co.
Price Bros. & Co. Ltd.
Reid, C. De Wolf.

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Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.
Diamond State Fibre Co., of Can., Ltd.

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American Woodpulp Corp.
Brompton Pulp & Paper Co., Ltd.
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Henry Atkinson.
John C. Christie Co.
M. Gottesman & Co. Ltd.
Interstate Pulp & Paper Co., Inc.
Laurentide Co., Ltd.
Lagerloef Trading Co., Inc.
Price Bros. & Co., Ltd.
Relph, Darwen & Pearce
St. Maurice Paper Co.
Scandinavian American Trading Co.
Spanish River Pulp & Paper Mills.

Kraft Paper:
Acer, J. H. A. & Co., Ltd.
Bathurst Lumber Co., Ltd.
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Gottesman, M. & Co., Inc.
Hodge-Sherriff Paper Co.
Price & Pierce, Ltd.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd.

Lumber Pulp & Paper Co.
Brompton Pulp & Paper Co.
Eddy, E. B. Co., Ltd.
Price Bros & Co., Ltd.

Mill Wrappers:

Acer, J. H. A. & Co., Ltd.
Brompton Pulp & Paper Co.
Eddy, E. B. & Co., Ltd.
Price Bros & Co., Ltd.

Nickle Alloy:

Beveridge Supply Co., Ltd.

Newsprint:

Abitibi Power & Paper Co., Ltd.
Belgo Paper Co.
Beveridge Supply Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Ford, J. & Co.
Laurentide Co., Ltd.
Patton, J. F., Inc.
Price Bros & Co., Ltd.
Spanish River Pulp & Pulp Mills.
St. Maurice Paper Co.

Roofing:

Ford, J. & Co.
Interstate Pulp & Paper Mills Co., Inc.
Spanish River Pulp & Paper Mills.

Parchment:

Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Specialties:

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Diamond State Fibre Co., of Can., Ltd.
Can. Nashua Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Garden City Paper Mills Co., Ltd.
Price Bros & Co., Ltd.
Howard Smith Paper Mills.
Victoria Paper & Twine Co., Ltd.

Soda Pulp:

M. Gottesman & Co., Inc.

Sulphate Pulp (Kraft):

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Bathurst Lumber Co., Ltd.
Brompton Pulp & Paper Co., Ltd.
Gottesman, M. & Co., Inc.
Dryden Pulp & Paper Co., Ltd.
Lagerloef Trading Co., Inc.
Wayagamack Pulp and Paper Co., Ltd.

Sulphite Pulp:

Abitibi Power & Paper Co., Ltd.
Acer, J. H. A. & Co., Ltd.
American Woodpulp Corp.
Donnacona Paper Co.
M. Gottesman & Co., Inc.
Lagerloef Trading Co., Inc.
Laurentide Co., Ltd.
Mattagami Pulp & Paper Co., Ltd.
Price Bros & Co., Ltd.
Riordon Sales Co., Ltd.
Spanish River Pulp & Paper Mills Ltd.
St. Maurice Paper Co.
Howard Smith Paper Mills.

Tissue and Toilet:

Beveridge Supply Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Victoria Paper & Twine Co., Ltd.

Wrapping:

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Brompton Pulp & Paper Co., Ltd.
Can. Vegetable Parchment Co., Ltd.
Dryden Pulp & Paper Co., Ltd.
Eddy E. B. & Co., Ltd.
Garden City Paper Mills Co., Ltd.
Interlake Tissue Mills Co., Ltd.
Spanish River Pulp & Paper Mills.
Victoria Paper & Twine Co., Ltd.
Wayagamack Pulp & Paper Co., Ltd.

Sulphite Mitscherlich:

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American Woodpulp Corp.
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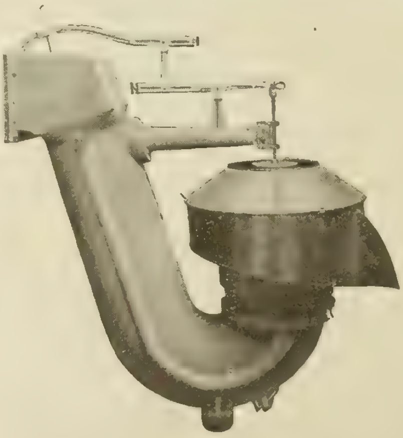

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Paper Cores:
Elixman Paper Core Co.

Paper Cutting Machines:
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Paper Genuine Vegetable Parchment:
Beveridge Supply Co., Ltd.

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Bertrams, Ltd.
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Johnson Wire Works, Ltd.
Norwood Engineering Co.
Mackinnon Steel Co., Ltd.
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Mills Works & Machinery, Ltd.
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Perkins, B. F. & Son. Inc.
Pulp and Paper Mill Accessories, Ltd.
Reid, C. De Wolf
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Sherbrooke Machinery Co., Ltd.
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Walsh Plate & Structural Works, Ltd.
Walmsley, Chas & Co.
Waterous Engine Works Co., Ltd
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Horton Steel Works, Ltd.
Hamilton, William Co., Ltd.
MacKinnon Steel Co., Ltd.
Walsh Plate & Structural Works, Ltd.
White, W. H.

Penstocks, Wood Stave:

Pacific Coast Pipe Co., Ltd.
White W. H.

Pillow Blocks:

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Port Arthur Shipbuilding Co., Ltd.
Victoria Foundry Co., Ltd.
Waterous Engine Works Co., Ltd

Pipes — Brass & Copper:

Tallman Brass & Metal Co., Ltd.

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Crane, Ltd.
McAvity & Sons, Ltd., T.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

Piping Hydraulic:

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Dodge Manufacturing Co.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Plate and Tank Works:

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Canadian Ingersoll-Rand Co., Ltd.
Can. Chicago Bridge & Iron Co., Ltd.
Dominion Engineering Works, Ltd.
Goldie & McCulloch Co., Ltd.
Hamilton, William Co., Ltd.
Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Walsh Plate & Structural Works, Ltd.
Waterous Engine Works Co., Ltd

Plates — Calenders:

Norwood Engineering Co.

Pneumatic Collecting and Conveying Systems:

Sturtevant, B. F. Co. of Canada, Ltd.

Pneumatic Thickeners:

Sherbrooke Machinery Co., Ltd.
Waterous Engine Works Co., Ltd

Pneumatic Tools:

Canadian Ingersoll-Rand Co., Ltd.

Power Factor Correcting Devices:
Presses:
Power Condensers:
Griswold & Co.
Boving Hydraulic & Eng. Co., Ltd.
Canadian Ingersoll-Rand Co., Ltd.
Hydraulic Machinery Co., Ltd.
Northern Foundry & Machine Co.
Port Arthur Shipbuilding Co., Ltd.

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Dominion Engineering Works, Ltd.
Hydraulic Machinery Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Sherbrooke Machinery C., Ltd.
Waterous Engine Works, Co. Ltd.

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Boving Hydraulic & Eng. Co., Ltd.
Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Diamond State Fibre Co. of Can., Ltd.
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Waterous Engine Works, Co. Ltd.

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Pulp Stones:

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Beveridge Supply Co., Ltd.
International Pulp Stone. Co.
Imperial Trading Co.
Lombard & Co.
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Smallwood Stone Co.
Smallwood-Low Stone Co.

Pulp Thickeners:
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Pulp & Paper Mill Accessories, Ltd.

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New Ontario:
Colonization Co., Ltd.

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Canadian Ingersoll-Rand Co., Ltd.
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Downingtown Mfg. Co.
Goldie & McCulloch Co., Ltd.
Goold Shapley & Muir Co., Ltd.
Hydraulic Machinery Co., Ltd.
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Harland Engineering Co., Ltd.
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Northern Foundry & Machine Co.
Ontario Wind Engine and Pump Co., Ltd.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.
Smart-Turner Machine Co., Ltd.
Sherbrooke Machinery C., Ltd.
Victoria Foundry Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.
Weir, Ltd., G. & J.

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Pumps — Boiler Feed:
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Goldie & McCulloch Co., Ltd.
Harland Engineering Co., Ltd.
McAvity, T. and Sons. Ltd.
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The Bristol Co

Rag Cutter Knives:

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Pulp & Paper Mill Accessories, Ltd.

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Gartshore, J. J.

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The Bristol Co.
Peacock Bros., Ltd.

Recording Wattmeters:

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Bertrams, Ltd.
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Port Arthur Shipbuilding Co., Ltd.
Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co. Ltd.

Regulators — Steam.

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Pickles, W. F.

Regulators:

Mills Works & Machinery, Ltd.

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Tallman Brass & Metal, Ltd.

Rods — Welding:

Tallman Brass & Metal, Ltd.

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Reed & Co., Ltd., Geo. W.

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Goldie & McCulloch Co., Ltd.

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Salt Cake:

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Sherbrooke Machinery Co., Ltd.
Waterous Engine Works, Co. Ltd.

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Goold Shapley & Muir Co., Ltd.
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Hydraulic Machinery Co., Ltd.
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Pulp and Paper Mill Accessories, Ltd.
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Walmsley, Charles & Co., Ltd.
Waterous Engine Works, Co., Ltd.
Westbye, P. P.

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The Mason Reg. & Eng. Co., Ltd.

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Foxboro Co., Inc.
Peacock Bros., Ltd.
Port Arthur Shipbuilding Co., Ltd.

Shafting:

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Victoria Foundry Co., Ltd.
Waterous Engine Works, Co. Ltd.

Sheet Lead:

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Victoria Foundry Co., Ltd.

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Hydraulic Machinery Co., Ltd.

Shredders:

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Vera Chemical Co., Ltd.

Slab Chippers:

Boving Hydraulic & Eng. Co., Ltd.
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Waterous Engine Works, Co., Ltd.

Slitters and Re-Winders:

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Canadian Fairbanks-Morse Co., Ltd.
Dominion Engineering Works, Ltd.
Langston Co., Samuel M.
Morrison, The J. L. Co.
Ticonderoga Machine Works.
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Smelter Lining:

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Beveridge Supply Co., Ltd.

Smoke Stacks:

Can. Des Moines Steel Co., Ltd.
Dominion Engineering Works, Ltd.
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Horton Steel Works, Ltd.
MacKinnon Steel Co., Ltd.
Port Arthur Shipbuilding Co., Ltd.
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Wilson, Paterson Co.

Soot Cleaners:
Beveridge Supply Co., Ltd

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McAvity T. & Son.
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Waterous Engine Works, Co., Ltd.

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Hamilton, William Co., Ltd.

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Waterous Engine Works, Co., Ltd.

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Walsh Plate & Structural Works, Ltd.

Sprocket:

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Can. Link-Belt Co., Ltd.
Hamilton Gear & Machine Co.
Hamilton, William Co., Ltd.
Northern Foundry & Machine Co.
Waterous Engine Works, Co., Ltd.

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Dominion Engineering Works, Ltd.
Hamilton, William Co., Ltd.

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MacKinnon Steel Co., Ltd.
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Waterous Engine Works, Co., Ltd.

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McAvity, T. and Son.
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Waterous Engine Works, Co., Ltd.

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Walmsley, Charles & Co., Ltd.

Steam Regulator:
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Pickles, W. F.

Steam Specialties:

Canadian Fairbanks-Morse Co., Ltd.
Crane Co., Ltd.
Pulp & Paper Mill Accessories, Ltd.
Waterous Engine Works, Co. Ltd.

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Steel Barrels:

Dominion Engineering Works, Ltd.
Smart-Turner Machine Co., Ltd.

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Goldie & McCulloch Co., Ltd.
Sturtevant, B F. Co. of Canada, Ltd.

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Lombard & Co.
Miramichi Quarry Co.
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Smallwood-Low Stone Co.

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Northern Foundry & Machine Co., Ltd.
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Babcock & Wilcox, Ltd.

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MacKinnon Steel Co., Ltd.

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Waterous Engine Works, Co., Ltd.

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Hydraulic Machinery Co., Ltd.
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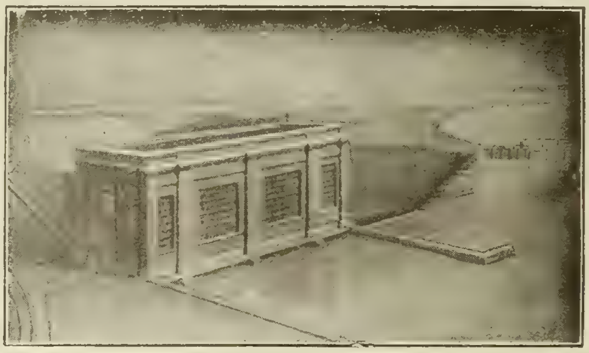

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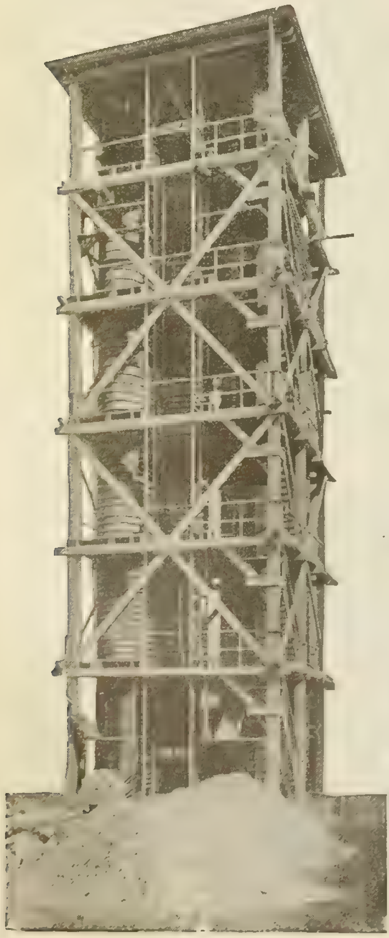

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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J. NEWELL STEPHENSON, M. S., Editor.

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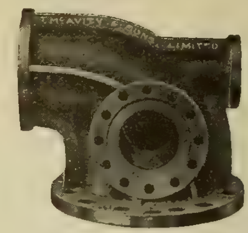

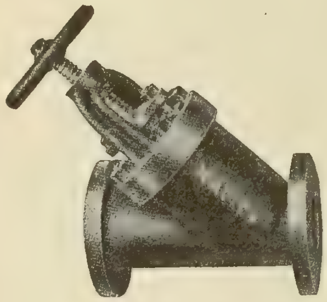

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Regular subscribers may have a copy if their request is sent in before Dec. 20. After that date the price will be $1.00 per copy.—Ed.

A LOSS OF 12 BILLION DOLLARS

The following article, from the pen of Mr. F. J. D. Barnjum, would be spoiled by lengthy comment or elaboration by the Editor. If such a statement and appeal can not rouse our governments to effective action, it is time for a change, with the future of our forests as an issue. We are surely, and none too slowly, slipping along the road that made China a land of part desert and periodic famine.

Now for the article.

Two Hundred Million Cords of Pulpwood Destroyed

The loss from the spruce bud worm, bark beetle and borer in the three Provinces of Quebec, Ontario and New Brunswick, according to the best authorities, amounts to, at least, two hundred million cords, equalling one hundred billion feet. Let sane people pause and consider what this means.

In order that the ordinary layman may comprehend just how great the calamity is, we will translate these figures into other forms of measurement that can be checked by any school boy. Two hundred million cords represent a pile of wood four feet high, four feet wide and three hundred and three thousand miles long, a four foot pile that would reach across the continent 101 times or would circle the globe 12 times; or, if manufactured into our cheapest newsprint paper, represent a money loss to Canada of more than twelve billion dollars, a sum that would pay off our entire national debt four times over, and with something to spare. And this, remember, is only a part of the whole story. But even with these figures before us it does not require a census or an expert to inform us that the present forest stand must disappear before such an avalanche of destruction in a very short period of time.

With this colossal loss staring us in the face our Governments are simply proceeding on the even tenor of their way just as if we had not suffered a loss that amounts to a national calamity. One would think that such an outstanding disaster would arrest the attention of our Government sufficiently to cause them, at least, to prohibit the export of raw wood out of the country.

From a purely selfish standpoint the limit holder and land owner has not suffered any loss in dollars and cents but rather the reverse, from the fact that the small remaining supply will bring four times as much per cord or thousand feet on account of this great depletion in our stand of wood. And our pulp and paper and lumber companies who have a supply of raw material will experience a season of great temporary prosperity while the wood supply lasts. This is, however, very poor consolation for the future of Canada.

The forest situation on the whole continent is equally alarming and in the United States even an embargo on manufactured lumber is being urged. For while the United States has four times the amount of standing timber-that there is in Canada at the present time their consumption and destruction is correspondingly greater. U. S. Government reports show an annual loss in that country by fire of over ten million acres. Their best authorities state that the yearly loss caused by insect pests more than equals the loss by fire, which means an additional ten million acres.

The depletion by the axe for the annual cut of two hundred and forty-four million cords of all kinds of wood represents the loss of at least another fifteen million acres, or an annual shrinkage of thirty-five million acres out of a total capital stock of three hundred and eighty-two million acres of all kinds of wood growth, or about eleven years' supply. In these figures I have not counted the loss from wind as we will allow that as an offset against the gross annual growth. It may be argued that there is some duplication in the loss from fire, but that is more than allowed for by the fact that large areas of the remaining timber are of poor and indifferent quality and are in inaccessible locations, so that on large areas the stand of timber will never be available for consumption. And in addition to these facts many fires are never reported, neither is the full amount of the cut ever recorded, which facts will more than provide for duplications in burned or other areas. And as the water table lowers in the earth and the surface of this continent becomes drier each succeeding year from the denudation of these millions of acres our fire losses on this continent are continually increasing with only slight variations over limited areas caused by unequal rainfall.

With these startling facts before the people of Canada, if our governments do not act the people will.

COBWEBS

Last week the memory of Joseph Grimsdale was honored by hundreds of the students and faculty of McGill University, when his funeral service was held in one of the halls of the University. Since the Chemistry and Mining Building was opened in 1897, Mr. Grimsdale was the resident janitor. Many in our industry, besides the editor, will always remember the courteous, cheery little man who was always ready to do something for somebody. It was a pleasure to him to do a favor. He took particular interest in the lecture courses on Pulp and Paper Making, having himself worked in a paper mill as a boy in England, more than sixty years ago. Those who came in contact with Mr. Grimsdale — or "Joe" — had the advantage of the friendship of a kindly, loveable gentleman. May his memory never grow dim in the halls of McGill or the hearts of her graduates.

SOME MILL ! !

According to our esteemed contemporary, *Paper*, a contract has been awarded to McDougall-McNeil, Limited, engineers of Essondale, B.C., for the erection of the first unit of a large pulp and paper plant at Phillips Bridge. "This unit is estimated to cost about $3,500,000 and will produce 100,000 tons of paper daily. Two additional units will be constructed as soon as the first unit is in operation. The total capacity is to be 300,000 tons of paper a day and the cost is estimated at about $13,000,000." (Paper, Nov. 22, 1922, p. 15.)

LABORARE EST ORARE

Let me but do my work from day to day
In field or forest, at the desk or loom,
In roaring market place or tranquil room;
Let me but find it in my heart to say
When vagrant wishes beckon me astray;
This is my work; my blessing, not my doom;
Of all who live, I am the one by whom
This work can best be done, in the right way.
Then shall I see it not too great, nor small,
To suit my spirit and to prove my powers;
Then shall I cheerful greet the laboring hours,
And cheerful turn, when the long shadows fall
At eventide, to play, and love, and rest,
Because I know for me my work is best.

—Henry Van Dyke.

YOU OUGHT TO READ IT

It takes a good book to keep the Editor awake till 3 a.m. Such a book is *The Man in the Twilight*, by Ridgwell Cullum; published by Putnam's Sons, New York.

The story is based on an imaginary situation in which a certain foreign ring of pulp and paper men are attempting to control the World's trade in pulp by buying up Canadian plants as well as by manipulating their own domestic production. The leader of the ring came to New York, and, after several years of successful stock market operations was beaten at his own game by a Mathematics professor from Scotland, who worked out the principle of the game and won seven million dollars. He had married a widow, whose daughter remained at boarding school. Fearing retaliation for his Wall Street coup, and, at the same time, desiring to free the Empire from domination of the pulp trade by the foreigners, the professor invests his winnings in the establishment of a huge groundwood plant in Labrador and builds up a model community.

The victim of the stock market battle, who is also the head of the foreign pulp syndicate, pursues the professor through a spy. The professor's wife and baby both die back home in the hospital and this takes the fight out of him; he leaves the mills in charge of a trusted manager and takes to the woods, where he assumes the role of priest to the lumber jacks, thus doing a great deal of good. He stops a fight in a lumber camp just in time to prevent the murder of the camp boss. The victor is a tenderfoot who has been bullied beyond endurance. The forest priest finds in him just the man to manage the Labrador mills. He makes good at the mills, and is enthusiastic over the battle for preeminence in the trade.

The foreigners have cut out their best river valley and, realizing their predicament, try to buy out their rivals. Of course, they fail in this, so start an underhand fight, using Bolshevik tactics. The professor's step-daughter has become private secretary to the Canadian manager of the foreign ring and is the leader in sowing dissention, even going in the dead of winter to sow discord in the camps, so as to prevent cutting of enough wood for the Labrador mill to fill its contracts. A strike and lockout occur at the Mill. The girl is captured in the woods and taken as prisoner to the plant. At an organization meeting in the community hall, the professor-manufacturer-priest tries to prevent trouble, but is shot by a spy and is nursed back to health by his step-daughter, who had never seem him before; he leaves for the woods without declaring himself and is captured by agents of the ring. But the mill goes on to success, and the expected relations develop between the new mill manager and the fair enemy.

The whole story is vivid and fascinating, and there is something in it that compels one to do some thinking.

PAPER COATING A DIFFICULT ART

Many precautions have to be taken in the coating of paper which is considered a difficult art. A plea is being made for a dull or semi-dull finish instead of the high glossy surface at present in vogue. A good deal of attention is being paid to the technical side of coated paper making in France, especially with reference to the quality of the coating stock and on the proper method of coating.—China Clay Trade Review.

Forest Fires As Seen By Fire Warden

The county of Westmoreland, of which Mr. Lund is Chief Forester, contains nearly one million acres. His report shows how efficiently forest fire protection may be managed when properly organized and energetically conducted. The funds for this work are secured by a tax on all forest lands in the county. Two local councillors in each parish are concerned in the administration of the work, which touches all the citizens. It is an almost ideal organization.—Ed.

We are living in strenuous times. The fire fiend is let loose and is rampant as never before. The appalling and increasing loss by fire in our cities, towns, villages, country districts and valued forests is causing grave alarm. Thinking men are beginning to take action that something may be done at once to stay the avalanche of destruction that is threatening the peace and prosperity and even the safety of organized society.

Man is a peculiar being. Created upright in the image of his Maker, — one of his first acts, when given a free hand, was an attempt to destroy himself. How well he succeeded some of us know. From then till now he seems bent on the destruction of nearly everything in his power. He ransacks the ocean and secures its hidden wealth. He tears his way through mountains and digs into the bowels of the earth and brings out the buried treasures. He turns rivers from their couses and even makes the elements subservient to his will. His special aim, however, seems ever to have been the destruction of the forest.

The early settlers regarded trees as their natural enemy and did all they could with axe and fire to destroy them. They never seemed to realize that the forest was a great and invaluable legacy to be used and handed down to posterity. That instinct of destruction is still a part of our make-up.

While we have come to the parting of the ways, and thoughtful men and women, for some time past, have foreseen the calamity that is before us, if the hand of destruction is not restrained, yet the great majority of the rank and file of our people have not yet been led to see the absolute necessity of a right-about-face action if industrial disaster is to be averted.

The people of Canada had a mighty inheritance in the wide extended forest lands. Even yet, despite the long continued wanton waste, it is a priceless asset and should be guarded as a pearl of great price.

Compared with our other great industrial resources, —agriculture, fishing and mining, forest production stands second. But how long will it be able to retain its place of pre-eminence? We have today in the Dominion of Canada probably in the vicinity of one billion acres of forest land of all classes, but how are we conserving it?

"Within the last seventy-two years, the life time of one generation, two-thirds to three-quarters of our timber wealth has been destroyed by fire." The spruce bud worm, for a number of years—has made serious inroads, and our extravagant methods of lumbering, along with the pulp-wood menace we are now up against are seriously threatening our industrial prosperity.

Nearly every industry is so dependent on the forest that its depletion is the undermining of them all. To my mind it is a grave question if we will be able to arise in our puny might and cope with the present conditions in such a manner as to conserve for the near coming generations a sufficient annual growth of timber to meet their actual industrial necessities.

Our primeval or virgin forests are mostly gone. The towering pine and giant spruce and hemlock, the leaning topped hackmatack and large spreading cedars of our boyhood days are not now to be seen, unless perhaps in a few remote localities. Their places are taken by a small inferior growth of some less valuable variety.

Longfellow, in beginning his pathetic story of Evangeline wrote: "This is the forest primeval. The murmuring pines and the hemlocks, bearded with moss, and with garments green, indistinct in the twilight, stand like Druids of old, with voices *sad* and *prophetic.*" While the words "sad" and "prophetic" were perhaps given no such meaning by the poet as I attribute to them; yet I sometimes think not only the "pines" and disconsolate, lamenting their lost condition and the cedar, if given the power of speech, would raise their voices in solemn protest against their wanton and rapid destruction by fire and axe, in a wail, sad and disconsolate, lamenting their lost condition and beseeching us to spare the remnant before it is too late.

As the amount of annual growth of a forest depends on the size of the trees, it is a suicidal practice to cut out all the medium sized trees in any operations and leave only the small growth. Besides the destruction of the unprotected young timber by the wind, it takes too long for such a depleted stand to recover. The annual growth of a tree is a thin sheet of fiber encircling the trunk beneath the bark, and, of course, the larger the tree the greater amount of fiber it produces. To cut timber below a reasonable standard size is proverbially to kill the goose that lays the golden egg.

I would like to utter such a note of warning against carelessness with fire and wasteful cutting as will tend to bring about improved conditions. Conservation, conservation, should be our slogan.

The County of Westmoreland has the honor of being the first in the Maritime Provinces, if not the Dominion, to take steps for the more adequate protection of our lumberlands. The owners secured legislation to tax themselves to raise a "Protection Fund" for that purpose. For nearly nineteen years the writer has had the responsibility of the over-sight of this laudable undertaking. How well the work has been done is for others to tell, but it easily goes without saying that conditions have so changed for the better that no one for a moment would think of going back to the old haphazard, do-as-you-please method. The expense has been kept at a minimum, and fully warranted by results. With an imperfect organization our aim has been to give reasonably adequate protection at the lowest possible cost. The small expense incurred this year was met by a balance remaining on hand from an assessment made several years ago.

We are working entirely independent and apart from Government control, though appreciating any helpful suggestions from, and acting in full harmony with, the Provincial Forester and other officials of the

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[*] An address delivered by Mr. C. E. Lund, Chief County Warden, at a Fire Prevention Meeting, held in Petitcodiac, N. B.

Crown Land Department. Unfortunately, last year we had, in addition to several small fires, three quite extensive and expensive ones. Each was set in violation of the law and should not have occurred, — being caused either by culpable carelessness or criminal design. This year, so far we have had only a few, mostly small grass fires and the damage has been almost nil. Our local Government is doing a commendable work in trying to cope with the fire fiend, but Governments and other organizations cannot do everything, and we will only meet with the maximum of success in forest conservation when we learn that the trees are our friends, no matter who owns the land on which they grow. They regulate the water flow, conserve the moisture in the soil, perpetuating the existence of running brooks and springs, making the country a possible abode for man and beast.

It is a great mistake to suppose that forest protection only benefits the owner of the growing timber. The person who carries on a lumbering operation in the usual way is a public benefactor, giving employment to agriculturists, artisans, tradesmen and, in fact, nearly all classes, and the various amounts paid out, from the making of the first sled, building camp, swamping roads, cutting, yarding, browing, driving, sawing, shipping and the freight charge and insurance on the last load of the finished product, consume so large a portion of the selling price, that often a very small margin remains in the hands of the operator who, in the meantime, has paid taxes on the property for school and municipal institutions besides carrying the risk and worry of the transaction. When we are educated to appreciate this, our interest will deepen and broaden and the impending menace of irreparable loss will be stayed.

Boys and girls should be taught the value of the forest during their school days with such intensity that the matter will be so instilled into the very fiber of their being that when they assume the responsibilities of citizenship the problem of forest conservation will be instinctively solved.

The following extract from my annual report of 1906 and quoted in an address read at the Forestry Convention at Fredericton a little later, still expresses my sentiments in this matter. "Agitation, legislation, education are the great three-fold bulwark that must be raised in protection of our forests. Agitation will always lead to legislation, and this, supplemented by proper education, is bound to produce results.

"In all reforms, when the people are educated to a wholesome appreciation of the law, rather than a dread of its penalties, the battle is largely won. The great question of forest valuation and preservation should be brought prominently before the minds of the rising generation during their school days. While I do not believe in a multiplicity of text books, yet I am fully convinced that a small treatise embodying the location, extent, and estimated value of our forests,— their usefulness, the necessity of their conservation, a summary of the law relating to their protection, and other such information, placed in the hands of our boys and girls, who so very soon will be men and women, would be a great step in advance in our educational system."

Deplorable as the appalling destruction of buildings, merchandise, etc., throughout the country is, by carelessness and incendiarism, the loss is not so permanent or lasting as in a burnt over forest. Though the country is correspondingly poorer yet buildings and other commodities may soon be replaced, and the suffering and inconvenience overcome, sometimes resulting in improved conditions. The loss sustained by the burning of a valuable stand of growing timber can never be restored. It takes from fifty to one hundred years to produce a common saw-log and much of the old growth timber is from one hundred and fifty to two hundred and fifty, or even more, years old. Besides this, the best timber areas when burnt over, in obedience to a natural law which we call crop rotation, always reproduce a different and almost invariably a much less valuable variety. Coniferous or evergreens are followed by deciduous woods and vice versa.

I do not wish to be misleading in regard to the growth of trees. I remember counting the rings in the stump of a white spruce twenty-two inches in diameter, showing a growth of forty-four years. This, however, is very exceptional. The tree had stood comparatively alone on the southern slope of a knoll where it received an abundance of sunlight, air and moisture.

Such possibilities of growth should be an incentive to our younger generation to begin the reforestation of some of our denuded areas. If properly protected it will pay good dividends, though possibly one may sow and another reap.

Science and invention have outrun our capacity to properly control the conditions introduced by them. This is proved by the many and increasing number of motor car accidents. Just so in the matter of fire. Under the primitive method of kindling a fire by rubbing two sticks of wood together, or the more modern manipulation of the steel and flint and punk, forest and other disastrous fires were at a minimum. The invention of the lucifer match brought disaster. Shall we continue our march along the ever widening road of so-called civilization and culture, or would it be better to halt and return to old and safer methods?

Perhaps it may have been expected that I would have something to say in regard to the best method of fighting forest fires, modern equipment, etc. While I am in full sympathy with aeroplane and lookout tower observation, chemical apparatus, force pumps and other advanced methods, yet I regard prevention as so much better than cure, I will to-night only emphasize the necessity of prompt action on the part of each and every person who first sees a threatening fire. When you see a fire try and put it out. If you cannot do so, summon help and do your utmost to save the forest.

The various causes of fires are too well known to be enumerated here. I will give one illustration but this is only one of many:

A valued forest, long and wide,
Adorned the verdant mountain's side;
A smoker's burning match was thrown
And by the breezes fanned and blown,
Till all that splendid forest green
A worthless waste may now be seen.

During the last two years, 807 forest fires were reported in New Brunswick, burning over an area of about 179,270 acres, with an estimated property loss of $1,157,101. This estimate does not include the loss suffered in the prospective growth of the timber which in many cases is much more than its present value. The timber loss, however, is not all we suffer from the burning of the forest. One fire is usually soon followed by another and the soil is so burnt away and its fertility destroyed as to make it useless for agriculture. Besides this the game is either driven out or destroyed. This Province would yet have been a hunters' paradise if the hand of the fire fiend had been stayed. How often in passing over a newly burnt area we see the destroyed nests of game birds and the charred bones of young animals. Surely heavy fines and jail sentences, if not flogging, should be given those who are partners in wantonly perpetuating such conditions. One million one hundred and seventy thousand dollars lost by forest fires in this Province during the last two years is a large sum and is not easily realized. If we should attempt to count it one dollar at a time each second, working ten hours a day, it would require about thirty-two days. Every dollar saved in fire prevention whether in buildings, merchandise, farm products, implements, machinery, etc., and especially in growing timber, is in many respects like putting the value of the property saved at interest to the credit of the community. I like to think of it in this way and can see no logical reason for viewing it otherwise.

One dollar saved and put at compound interest for sixty years at 6 per cent will then amount to about $33. Let us view our two years forest fires loss in this light. It would at the end of that time amount to over thirty-eight million dollars. We may grasp this better when I say it would require nearly three years to count such a sum working as above noted. It is appalling to think of the enormous and almost incomputable loss caused by fire in every way in Canada during the last century, and it is still going on. What are we going to do about it? What can we do? What will we try and do? The object of this meeting will be fully attained if we are led to realize that the matter of fire prevention is largely in our own hands. Let us each resolve, — never to set a fire unless it is necessary, and never to set a fire we can't control. Let owners and tenants see to it that their furnaces, stoves, flues and pipes are perfectly safe. Let housekeepers be careful of their fires and lamps and the disposal of their ashes. Let everybody be careful in the use of paraffin and gasoline and other explosives. Let smokers extinguish their burning matches, cigar and cigarette butts before throwing them away. Let picnic parties and campers be absolutely sure their camp fires are extinguished before leaving them. Let every sane person in every way do his best to prevent fires occurring. Confine fire fiends and fools in penitentiaries, jails, asylums, reformatories, workhouses and on penal farms. Let brains have a larger part in shaping our destiny, and then will the dawn of a truer civilization appear, a sense of greater serenity will be felt among the people, insurance rates will go down apace, much stress and strain and worry will be eliminated and the world will be a happier and better place to live in.

The Provincial Paper Mills Company, Limited, have sent out notices advising the trade that after January 1 they will be turning out bleached sulphite exclusively. Hitherto the mills have been running both bleached and unbleached sulphite.

THE FREIGHT CAR SUPPLY

The following appeal by the Railway Association of Canada is of great importance to the Pulp and Paper Industry. Part of it is furnished in convenient form for posting on the Bulletin Board.—Ed.

The attention of Executives in all Canadian concerns interested in shipping or receiving shipments of goods without undue delay, is drawn to the reasons for the increasing car shortage, the effect on this situation of the recent coal and railway strikes in the United States and the growing necessity for public co-operation to offset the difficulty.

In the first place, the improvement in business conditions has increased the demand for cars.

Secondly, the railway strike has so hampered rail operations in the United States that Canadian cars entering that country are only with difficulty being recovered. At the present time there are approximately 24,000 more Canadian box cars in the United States that United States cars of a similar class in Canada.

And third, in addition to this factor of impaired railway service, the recent termination of the coal strike throws on the American railways a suddenly increased demand for cars and motive-power to move accumulated orders for coal. This makes it even more difficult for the Canadian roads to keep down the number of their cars on foreign rails.

To meet the situation, the railway Association of Canada has made special direct representations to Washington and obtained assurances that the United States railways will do their best to hurry the return of our cars; and the Canadian roads, through this Association, will maintain constant pressure to see that this is done. Furthermore, the dwindling supply of cars will be offset as far as possible by the usual effort of our roads to move cars faster and farther and thereby make each car carry more in a day.

In spite of the railways' best efforts, however, the shortage is becoming daily more acute.

One great factor in car economy lies out of the railways' control—and in your hands, or the hands of your Shipping and Receiving Departments. If on your instructions they will take pains to load more goods in each car and release cars promptly, you will help protect your plant and your neighbors' plants against the further danger of car shortage.

Even if it takes your staff a little more time to load outgoing cars to utmost capacity—and

Even though you may already be releasing cars well within the free time limit—

It will pay to increase this shipping efficiency still further and co-operate with the roads.

United States traffic is from 5 per cent to 17 per cent heavier this Fall than last Fall, quite aside from strike accumulations of shipments. Canada appears to be following suit. To share in returning prosperity it is essential to help protect your own car supply.

Shipping and Receiving From Employees

During the present period of our car shortage, employees will please see that out-going freight cars are loaded to their maximum carrying capacity.

Also that incoming cars are unloaded at once — and that outgoing cars are loaded and released with similar speed.

Car shortage is a menace to everyone. It delays our shipments, and this affects our ability to keep running and that affects every employee!

Pulp and Paper Cencus for 1921

The Dominion Bureau of Statistics has just issued a preliminary report on the Pulp and Paper Industry of Canada in 1921 which shows the importance of that industry in the Dominion. The following summary of this report, issued by the Canadian Pulp and Paper Association, gives the principal items of interest.

Mills in Operation During 1921

Total number of mills 100, comprising 40 pulp mills, 27 pulp and paper mills, 33 paper mills. The distribution of these mills among the various provinces was as follows: British Columbia, 4 pulp mills, 2 pulp and paper mills, total 6; Ontario, 8 pulp mills, 13 pulp and paper mills, 18 paper mills, total 39; Quebec, 17 pulp mills, 12 pulp and paper mills, 15 paper mills, total 44; New Brunswick, 5 pulp mills; Nova Scotia, 6 pulp mills.

Capital Invested

Total capital $378,812,751, distributed as follows: Quebec $171,477,753; Ontario $139,666,276; British Columbia $39,152,821; New Brunswick $23,394,271; Nova Scotia $6,121,630. The total capital invested in 1920 according to the Census Report was $347,553,333, so that 1921 shows an increase of $31,259,418.

Number of Employees

The total number of employees including executives, technical experts, clerical help and mill employees was 24,611 of whom 21,480 were employed in the provinces of Quebec and Ontario. The total salaries and wages paid was $34,199,090, distributed among the various provinces as follows: Quebec $16,726,716; Ontario $12,952,889; British Columbia $3,205,429; New Brunswick $1,151,229; Nova Scotia $162,827.

Machinery Equipment

In all mills making groundwood pulp there were 674 grinders with a 24 hour capacity of 4,8080 tons, or a yearly capacity of 1,320,344 tons dry weight and using 343,544 H.P.

In all chemical pulp mills were 159 digesters with a yearly capacity of 1,039,866 tons.

In all mills making paper there were 110 Fourdrinier machines with a 24 hour capacity of 3,945 tons or a yearly capacity of 1,398,766 tons.

Consumption of Wood

Total consumption of wood was 2,180,578 cords valued at $38,283,262, giving an average cost of $17.55 per cord. This amount consisted of spruce 1,499,478 cords; balsam 511,791 cords; hemlock 122,997 cords; pine 40,406 cords; poplar 3,557 cords and other kinds 2,349 cords. Distribution by provinces was as follows:

Province	Cords	Cost at Mill	Av. Cost
Quebec	1,111,277	$19,657,326	$17.68
Ontario	700,589	13,378,019	19.09
Brit. Columbia.	225,240	3,482,007	15.45
N. Brunswick. .	121,110	1,518,784	12.54
Nova Scotia . .	22,362	247,126	11.05
Total . . .	2,180,578	$38,283,262	$17.55

In addition to the quantity consumed at the mills 1,092,553 cords valued at $14,617,610 were exported.

PRODUCTION

Wood Pulp

Total production 1,549,082 tons of which Mechanical 931,560 tons, Sulphite 481,984 tons, Sulphate 131,337 tons, Soda 4,201 tons; of this quantity 97,339 tons of wood pulp valued at $6,407,028 was produced for sale in Canada and 581,200 tons valued at $35,919,185 was for export, leaving 870,543 tons valued at $36,012,065 produced for the use of the mills.

Paper

The total selling value of the paper produced was $108,676,952 of which newsprint was valued at $78,784,598; book and writing paper at $12,550,520; wrapping paper $6,634,211 and boards at $6,225,948. Quantities produced were, newsprint 841,114 tons; book and writing 53,530 tons; wrapping 55,898 tons; boards 89,114 tons; other paper 18,285 tons.

Exports of Pulp and Paper

The total value of the exports of pulp and paper was $108,565,046, of which pulp exports were valued at $44,133,675 and paper exports at $75,431,371. The quantities exported were, mechanical pulp 223,494 tons; sulphite, bleached, 76,801 tons; sulphite, unbleached, 127,389 tons and sulphate 99,538 tons. Newsprint exports were 709,241 tons, wrapping paper 6,693 tons; book paper 1,675 tons and bond and writing paper 1,185 tons.

Franklin H. Smith, former assistant secretary of the National Lumber Manufacturers' Association, has become associated with the United States Tariff Commission as chief of its Forest Products Division. Mr. Smith was for many years connected with the United States Forest Service.

D. P. Brown and G. Winquest of the New York and Pennsylvania Company, Johnsonburg, Pa., spent a couple of days in Toronto on business last week.

KING ASKS ALL TO HELP

A call to Canadian citizens to assist in preventing the devastation of Canada's remaining timber supply has been issued by Premier King in a letter to the Canadian Forestry Association.

"The Canadian people have before them many onerous and perplexing problems demanding for a wise solution, the utmost in unselfish citizenship" writes the Prime Minister. "One of the finest tests of loyalty to the State is to be found in individual support of the cause of forest conservation. Its keynote and inspiration lie in the forethought for Canada's future. Present gain should be made subordinate to the profit, comfort and safety of the generations to come. The people of Canada own more than 85 per cent of the forest lands. The State with its uninterrupted tenure, is peculiarly endowed to act as conservator to a timber crop which may take a century to mature. We must look upon our forest resources as a source of wealth held in trust for this and future generations."

"This is emphatically the business of citizens. We cannot relegate it to any control that does not focus its eyes on the legitimate rights of the people of a century hence."

The Wear of Machine Wires

By Major R. Marx M. C., R. Sc. and Professor E.
Mallett M. Sc. A. M. I. C. E. A. M. I. E. E.

The following paper is quite apropos of the discussion now going on in the Pulp and Paper Magazine. — Ed.

Very little has been published in connection with this subject although it is a matter of intimate concern to every papermaker. Such published matter as exists deals in the main with the various causes of accidental damage: but no evidence is available of an attempt to state the normal causes of wear in numerical terms.

It is true that the useful life of a considerable proportion of wires is terminated prematurely owing to accidental or abnormal causes. In this category is included the cumulative effect due to such causes as incorrect alinements, faulty guiding, untrue rolls, etc., as well as damage due to direct action as might be caused by a split couch jacket or the abuse of acid or heat for cleaning.*

There is clearly no possibility of expressing such "abnormal" causes and their effects in mathematical terms. On the other hand it should be possible to discover some relation between the life of a wire which is worn out in a normal manner, and the individual causes which contribute to its wear, given the necessary particulars of the wire and of the conditions under which it operates. Such a relationship once established would be of considerable value. The life of the wire would be expressed as a function of each cause or group of causes of wear and it would be then possible to attack the most influential causes with a clear grasp of the object in view.

It appears doubtful whether at present each of the "normal" causes of wear is clearly understood. They have afforded much scope for speculation and impirical treatment: but only by actual measurement can these causes and their effects be determined with any degree of certainty. Moreover in order to eliminate the effect of abnormal values and co-incidence, it is necessary to employ the statistical method of investigation which must cover a large number of observations.

Without causing undue inconvenience in the individual paper mill it should be possible for such observations and records to be taken over the necessary period of months. Data obtained from a number of selected mills, if properly collated, would be likely to yield results not only of scientific interest but of considerable monetary value to the industry as a whole.

The present paper is put forward merely as a beginning of the investigation into the wear of wires and an indication of a possible method of treating one aspect of the problem. The data on which this paper is based were obtained by J. Heess on a 65 inch machine making common wrappings largely from dirty waste papers and are the results of months of observations. It is true that our deductions from these observations appear to follow a definite law with reasonable accuracy considering the nature of the tests: but it would be absurd to claim without further confirmation that this law is of general application, or that the results are more than an encouragement to proceed further on the lines indicated.

The data used for the following calculation are given in Table A. Heess originally undertook the experiments in order to demonstrate that his patent arrangement of so arranging the suction boxes as to realise an uninterrupted vacuum is an improvement over the usual arrangement. This explains the reason for the two sets of readings in Table A, but any tenable theory of the wear of the wire must of course cover both sets.

The couching angle and pressure were the same in every test. The higher pressures in the suction boxes were measured with calibrated vacuum gauges while for measuring the lower pressure U tubes were employed. The vacuum in each box was measured at approximately the centre of the box (i. e. half way across the machine.)

The following symbols are employed: —

v = speed of wire

h_1, h_2, h_3, etc = the vacua in the first, second, third etc, suction boxes counting from the breast roll.

$h_1 + h_2 + h_3 + \ldots\ldots\ldots\ldots = h$

m = substances of sheet or weight per unit area

t = total weight of paper produced on wire during its entire life.

Life of wire therefore equals the time taken to produce t tons of paper. Assuming the width of deckle always to be the same, the life of the wire will therefore be proportional to $\frac{t}{mv}$ and calling w the wear of the wire $= \frac{1}{\text{life}}$ which is proportional to $\frac{mv}{t}$

The values for w are tabulated in column 5 of Table B.

Considering first the friction of the wire in its passage over the suction boxes, which were of the open type: If b = thickness of the walls of the boxes c = the clearance between the inside edges of the walls and l = the suction length of each box, then for each box the frictional area will be equal to $2.b.l$, and the total vertical force on the wire $= k.c.l.h$; where h_1 is the vacuum maintained in the box, and k is a constant.

Since the friction is proportional to the vertical force, we have:

friction $= u.k.c.l.h$, where u is the coefficient of friction. It will be noted that the value of the friction is dependent of the thickness of the walls of the box.*

This friction should be spread over an area of $2.b.l$ of wire.

Hence the average frictional force per unit area of wire causing wear will be: —

$$\frac{u.k.c.l.h_1}{2b.l.} = \frac{u.k.c.h_1}{2b}$$

A similar reasoning applies in the case of boxes with perforated tops.

Assuming that the value of c is the same for all boxes on the machine, as is generally the case; it follows that the total frictional force on the wire due to contact with all the boxes is: —

$$\begin{aligned} & u.k.c.l.h_1 + u.k.c.l.h_2 + u.k.c.l.h_3 + \ldots\ldots\ldots\ldots \\ & = M\,(h_1 + h_2 + h_3 + \ldots\ldots\ldots\ldots) \\ & = M.h. \end{aligned}$$

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* The effect of the seam may conveniently be put in a special category. It is of considerable importance especially with fast running machines and comparisons as between different makes of wire would be very interesting.

* An interesting corollary to this is that the wear of the wire is not necessarily affected by the number of suction boxes per se, and that providing the total pressure due to the vacuum in all the boxes may be added to without detriment to the wire on the score of friction. Comparison between lines 1 to 7 and 8 to 15 in Table A tends to substantiate this statement and it is moreover borne out by other comparative tests of a similar nature carried out on different machines.

TABLE A

	Vacua in Suction Boxes Inches of Mercury Vacuum				Percentage of dryness before and after Couch Press		Speed of Machine feet per minute	Substance of sheet in pounds D.C.	Total production per wire
Ref No.	I h_1	II h_2	III h_3	IV h_4	Before % d_1	After % d_2	v	m	Tons
					ARRANGEMENT of Suction Boxes with air gaps				
1	—	2.7	3.0	3.9	10	18.3	145	41.0	211
2	—	2.1	2.7	4.2	11	18.4	110	53.4	208
3	—	1.5	1.5	2.7	11.5	16	190	26.6	210
4	—	1.8	2.7	3.0	11	18	165	33.8	260
5	—	2.1	2.7	4.2	10	18.5	145	41.0	167
6	—	1.8	3.0	3.9	11.5	18.4		41.0	
7	--	1.5	2.7	3.6	10.5	17.6		32.8	
					ARRANGEMENT of Suction Boxes with uninterrupted vacuum				
8	.4	.3	.5	2.4	13.6	19.2	115	53.4	329
9	.3	.2	.5	2.4	16.6	18.9	180	32.8	312
10	.4	.3	.5	3.5	17.9	19	180	32.8	334
11	.2	.2	.3	.8	10.3	17.4	115	53.4	304
12	.3	.3	.5	1.5	14.5	18.9	115	53.4	288
13	.4	.3	.6	3.2	15.3	20.2	115	53.4	300
14	.3	.4	.6	.9	11.8	32.2	90	65.6	375
15	.4	.4	.6	1.0	14.1	24	90	65.6	

TABLE B

1	2	3	4	5	6	7	8	9
Ref. No.	m	v	t	$w = \frac{mv}{t}$	$\frac{w}{v}$	h	$20\frac{m}{v}$	$h + 20\frac{m}{v}$
1	41.0	145	211	28.2	.194	9.6	5.6	15.2
2	53.4	110	208	28.2	.256	9.0	9.7	18.7
3	26.6	190	210	24.0	.127	5.7	2.8	8.5
4	32.8	165	260	20.8	.126	7.5	4.0	11.5
5	41.0	145	167	35.6	.246	9.0	5.6	14.6
6	41.0							
7	32.8							
8	53.4	115	329	18.6	.162	3.6	9.3	12.9
9	32.8	180	312	18.9	.105	3.4	3.6	7.0
10	32.8	180	334	17.7	.098	4.7	3.6	8.3
11	53.4	115	304	20.2	.175	1.5	9.3	10.8
12	53.4	115	288	21.3	.185	2.6	9.3	11.9
13	53.4	115	300	20.4	.178	4.5	9.3	13.8
14	65.6	90	375	15.7	.175	2.2	14.6	16.8

The faster the wire travels over the surfaces of the suction boxes the greater will be the wear in unit time. Since the rubbing surfaces are well cooled by the continuous flow of water, it is reasonable to assume that no great rise in temperature occurs, in which case u will probably remain constant for various speeds of wire. The wear due to the suction boxes will therefore vary with the speed of the wire: and we may write for that part of the wear (w) which is due to the suction boxes:

$$w_s = M.h.v.$$

There will no doubt be frictional wear at various other points besides the suction boxes, e. g. at the apron, breast roll, couch, guide rolls, table rolls etc. This wear will be at any rate to some extent dependent on the tension in the wire which latter will probably be partially dependent on the pull of the suction boxes: so that some of this additional frictional wear will be included in the constant M.

However if the equation $w = M.h.v.$ is true, then on plotting $\frac{w}{v}$ against h one should obtain a straight line. The values of h are shown in column 7 of Table B and those of $\frac{w}{v}$ in column 6 of the same Table, while the points are plotted in Fig. 1. each with its reference number marked against it.

It is immediately obvious from the scattered positions of the points in Fig. 1, that the above equation is not true and therefore that the friction of the wire as calculated, is insufficient to account entirely for the wear. An endeavour is now made to introduce other variables.

It will be observed that points 2, 8, 11, 12 and 13 (enclosed by a line) refer to like substances of sheet (M = 53.4 lbs. D. C.) and like speeds of wire, (v = 115 ft /min) that is to say to like production per hour (assuming like deckle widths.) The line 1 is drawn through these points having the equation $\frac{w}{v} = .128 + .014\ h$……………………(1)

Looking at points 9, 10, 5 and 4 which may be roughly grouped together with average m = 31 and v =

180 and the two points 5 and 1 with $m = 41$ and $v = 145$, it would appear likely that the value of $\frac{w}{v}$ increases as m increases but not in direct proportion to the increase of m. Trials show that roughly $\frac{w}{v}$ increases in proportion to $\frac{m}{v}$.

On the assumption that this is so, we have:

$\frac{w}{v} = D \times \frac{m}{v} + .014\,h$: and where $m = 53.4$ and $v = 115$ $D \times \frac{m}{v} = .128$, which gives $D = 0.277$.

Equation 1 may then be written

$$\frac{w}{v} = .277\,\frac{m}{v} + 0.014\,h$$

$$= 0.014\left(19.8\,\frac{m}{v} + h\right)$$

or say $\frac{w}{v} = 0.014\left(20\,\frac{m}{v} + h\right)$ ....(2)

Trying this on points 9 and 10 whose mean point is $h = 4.0$ and $\frac{w}{v} = .104$, and whose $m = 32.8$ and $v = 180$, by inserting the values of h, m and v, we get:—

$\frac{w}{v} = 0.014\left(20 \times \frac{32.8}{180} + 4.0\right) = .107$ which agrees well with the actual value of .104.

Again with points 1 and 5 with a mean of $h = 9.3$ and $\frac{w}{v} = .22$, for $m = 41.0$ and $v = 145$ we have:—

$\frac{w}{v} = 0.014\left(20 \times \frac{41}{145} + 7.4\right) = .21$ which is in fair agreement with the actual value of .22. Similar trials showed that most of the remaining points were not far out. The values of $20\,\frac{m}{v}$ were entered in column 8 of Table B and those of $h + 20\,\frac{m}{v}$ in column 9, while in Fig. 2, the values of $\frac{w}{v}$ are plotted against $\left(h + 20\,\frac{m}{v}\right)$

The points so obtained show reasonable agreement with the straight line

$$\frac{w}{v} = 0.014\left(h + 20\,\frac{m}{v}\right)$$

or $w = 0.014\,hv + .28\,m$ ....(111)

or t the total production per wire in tons will be proportional to $\frac{mv}{w}$

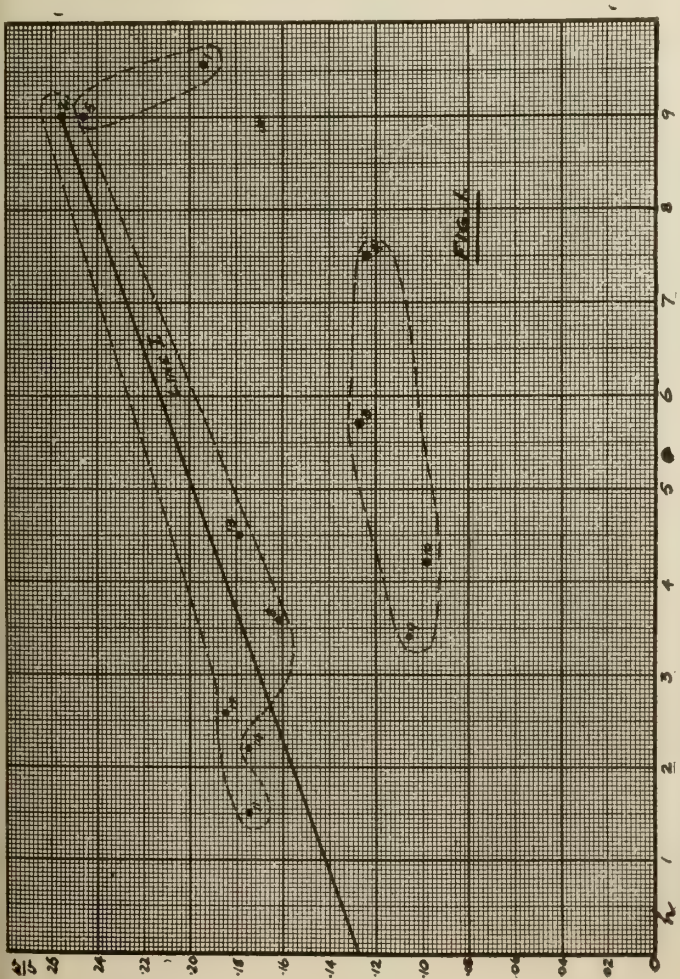
$$= \frac{mv}{0.014hv + .28m}$$

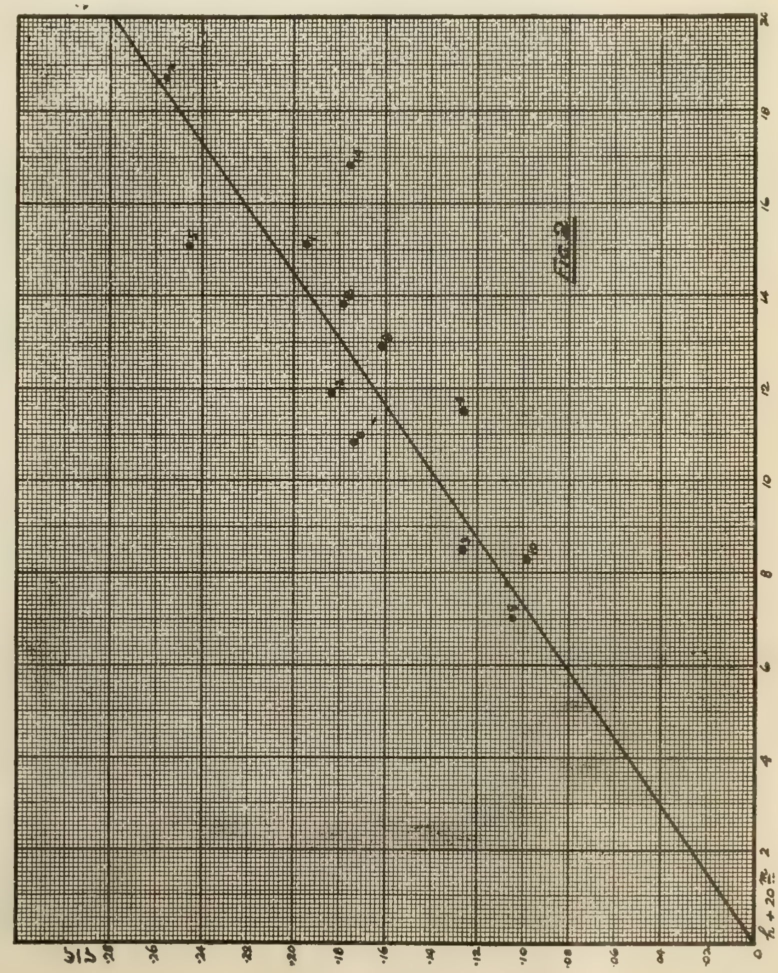
where m is given in lbs. D. C.

h is given in inches of Mercury

v is given in feet per minute

The greatest discrepancy occuring in the actual results obtained is rather over 20 per cent. which is not unreasonable considering the nature of the experiments. It will be noted that part of readings apply to experi-





ments in which three boxes were used and part to four boxes; while the amount of vacuum in the different boxes varied very widely, so that on the whole the deductions cover a fairly wide variation of conditions for one machine. We consider that under the circumstances the results obtained are sufficiently encouraging to warrant further investigation on the lines indicated.

In equation (111) as already stated, the term containing $h\ v$ represents the frictional wear. The term containing m will include chemical action if the effect of the latter in unit time is proportional to the substance of sheet. (Other conditions remaining equal this is not an impossible assumption).

With dirty papers in which the effect of grit deteriorates the wire, (as was the case in the present experiments) this effect per unit of time may also not unreasonably be held to be a function of the substance and therefore included in the term containing m.

In practice, however carefully a wire may be treated, the wear will not be absolutely uniform over the whole of its surface. According to Bouyer* a wire under normal conditions should end its useful life solely owing to excessive wear of the weft causing ultimate breakage. The weft will wear most at places where the wire may show a slight depression due to accident or near the seam where the rigidity of the fabric is least.

At these places the weft wires will all break within small areas either roughly circular in shape, or shaped according to the accidental depression, leaving the warp wires unbroken. Moreover the quality of the wire will never be absolutely uniform all over.

It follows that even when the wear takes place "normally" there will always be incalculable factors affecting the life of the wire in some small measure: but the effect of these should be so small as not seriously to detract from the practical value of an expression for the life of the wire obtained in some such way as we have described.

APPENDIX

Relation between the drying effect of the Suction Boxes and the vacua maintained in them.

One would not unnaturally expect to find a close relationship between the dryness of the sheet after passing the suction boxes and the vacua employed in the latter.

In investigating such relationship it is necessary to take into account the output of the machine as well as the percentage dryness of the sheet, as these two factors jointly determine the actual quantity of water extracted.

For like deckle widths the output of the machine is proportional to $m.v$. The smaller the value of $m.v.$, the smaller is the actual quantity of water that must be extracted from the sheet in order that a given dryness (d_1) may be obtained.

A convenient way of taking into account the variations of value of $m.v$ is to multiply the term d_1 by the ratio $\frac{mv}{m_0v_0}$, where the value of m_0v_0 is a "standard" adopted for the machine.

In the present case the value of m_0v_0 is taken as 6000, and the different values of d_1 are accordingly multiplied by $\frac{mv}{6000}$; giving the values for the "corrected dryness" (D_1)

In Fig. 3 the values of the corrected dryness so obtained are plotted against the sum of the vacua (h) in the suction boxes. Two straight lines (II and III) are obtained, which correspond to the usual arrangment of suction boxes and to the new arrangement of boxes, respectively. Both straight lines intersect at a point on the axis of D_1 which shows that in both cases, if there were no vacuum in the boxes, the percentage dryness of the sheet on entering the couch would be the same, viz 7%. This dryness would be due to ordinary drainage on the wire.

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* La Papeterie, No. 19, 1921, p. 870.

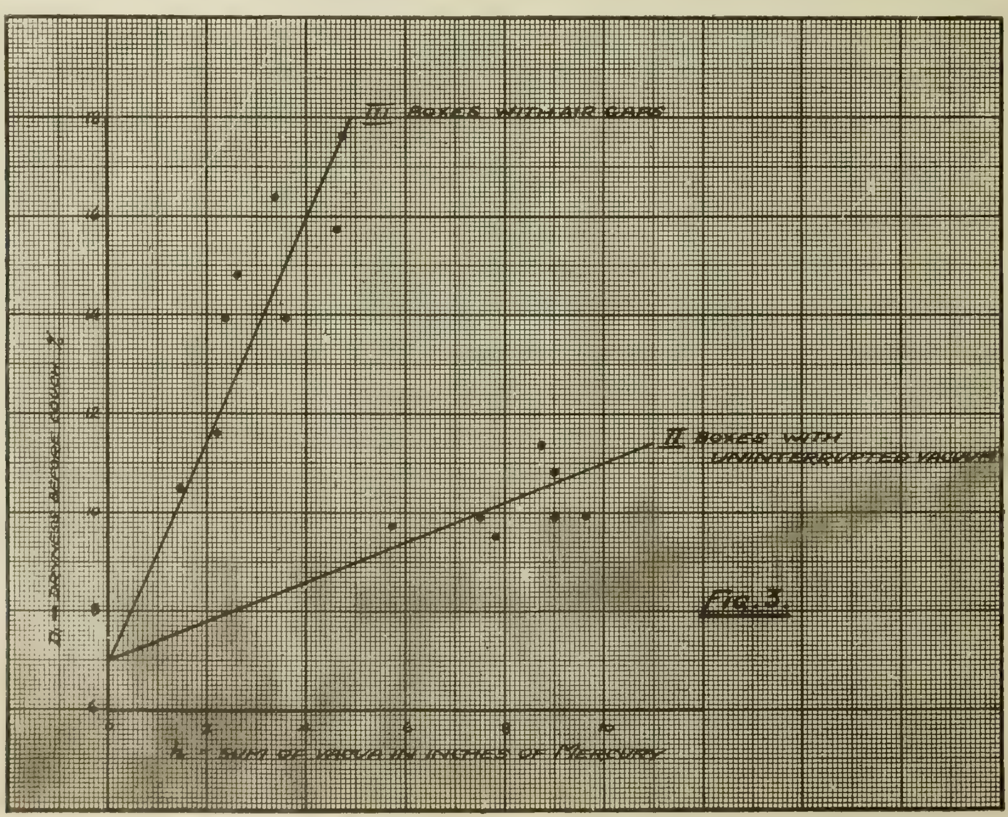

Fig. 3.

The significance of the difference in slope between the two lines is noteworthy.

The equations to the lines are:—

Line II $D_1 = 7.0 + .40\ h$ .... (5)

Line III $D_1 = 7.0 + 2.24\ h$ .... (6)

This means that the new arrangement of boxes was $\frac{2.24}{.40} = 5.6$ times more effective in extracting moisture from the sheet than the ordinary arrangement, notwithstanding the higher total vacua employed with the old arrangement in every case.

The actual figure obtained for the improved efficiency applies of course only to the series of tests under discusion. It seems however probable that some such improvement would be found under most conditions. The point is of considerable interest as it opens up the whole question of the mechanism of water extraction on the wire.

As far as the action of the suction boxes is concerned we are inclined to think that the improvement obtained with the uninterrupted vacuum is due to the fact that the suction is never released during the whole of the time the sheet is passing over the boxes, but is continuous and gradually increasing in effect. In the usual arrangement of boxes, the release of the suction between the boxes not only permits the sheet to reabsorb the water which has been drawn into the meshes of the wire and to the underside of the sheet: but the sudden application of atmospheric pressure to the underside of the wire tends actually to force the water back into the sheet. Thus the work of moisture extraction has to be recommenced by each box instead of being continuous. Moreover there is probably a considerably higher loss of vacuum in the usual arrangement due to leakage which can take place at both lips of every box.

With the improved arrangement similar leakage can be restricted to two lips in all, and will be less per lip owing to the lower pressure differences employed.

This explanation of the marked improvement obtained is speculative, but seems not an unlikely one. Definite information can only be obtained as the result of careful observations made under known conditions over reasonable periods of time. It affords food for reflection that although over 200 million tons of water are extracted annually on the world's machine wires at heavy cost, so little is known regarding the real nature of the processes employed or the factors which govern their efficiency.

Plans For The Convention

We are now in a position to give further details of the arrangements for the tenth annual meeting of the Canadian Pulp and Paper Association, to be held at the Ritz-Carleton Hotel, Montreal, on January 24, 25 and 26.

From present indications the meetings of the association will be the largest attended in the history of the association. Applications for tickets and for the reservation of rooms are coming in very freely. The fact that the annual convention of the Canadian Lumbermen's Association is to be held the same week will bring additional visitors to Montreal-men who are interested both in the lumber and pulp and paper industries.

The annual business meeting will be held at 10 o'clock on Friday, January 26, at the Ritz-Carlton Hotel, to be followed by the annual luncheon. Notice has been given of certain changes in the by-laws and these will be discussed at the annual meeting. The chief speakers at the luncheon will be Sir Edmund Walker, C.V.O., L.L.D., D.C.L., President of the Canadian Bank of Commerce, who will speak on International Business conditions, with special reference to their interest to Canada; and Mr. S. E. Thomason, general manager of the Chicago Tribune, and vice-president of the American newspaper Publishers' Association, who will talk on the Mutual Dependency of the Publishers and the Paper Maker.

The program at the annual dinner will be on different lines from those of previous years. There will be a diversified program of entertainment. Professor Stephen Leacock, of McGill University, will, it is expected, be the guest of honor.

The Technical Section

The following is the advance program of the Technical Section, to be held on Jan. 24-25:

"Stock Saving With and Without Save-Alls", by E. J. Trimbey, Trimbey Machine Works, Glen Falls, N.Y.

To be followed by discussion by L. E. Kendall, of the Abitibi Power and Paper Co., Ltd., Mr. Morrison, Oliver Filter Company and others.

"Functions of Press Felts," by E. A. Rees, Director of Research, F. C. Huyck & Sons, Albany.

"The Properties of Wood in Paper Making", by Dr. Bjarne Johnsen, Hammermill Paper Company, Erie, Pa.

"The Manufacture of Ink and the Relation of Ink Properties to the Printing of Paper of All Grades", by T. J. Ransom, Ault-Wiborg Co., of Canada, Ltd., 302 Lagauchetiere St., Montreal.

"The Utilization of Steam in a Modern Newsprint Mill," Presented by Surrey W. Slater, of the St. Maurice Paper Company, Ltd., Cap Madeleine, Que., and J. E. A. Warner.

Discussion led by E. B. Wardle, of the Laurentide Co., Ltd., and D. L. McLeod, Abitibi Power and Paper Co., Iroquois Falls, Ont.

"Some Results of Recent Pulp Tests", by E. P. Cameron, Pulp and Paper Division, Forest Products Laboratories, Montreal.

The Woodlands Section

At the meeting of the Woodlands section, on January 25 at the Ritz-Carlton Hotel, there will be a discussion on research work in forestry in Canada, opened by Mr. Ellwood Wilson; a discussion on logging cost accounting, and one on how far the pulp mill can go in the utilization of decayed and insect killed wood. Dr. J. S. Bates, will lead this discussion. The Technical and Woodlands sections will hold a joint luncheon, and afterwards there will be a demonstration of wireless and radio, arrangements being made for the reception of messages from stations in the woods. Besides this, films showing tractors in operation will be shown.

Meetings of the several trade sections will be arranged and their members duly notified.

The Newsprint Service Bureau will meet at 3 p.m. on Friday, January 26th.

Be sure. Don't suppose. Don't guess Find out. If you don't know, ask. Be cheerful, and if you can't be cheerful look cheerful, anyway.

Technical Section

REVIEW OF RECENT LITERATURE

A.-Properties and Testing of Materials

A-3 Lignin from Rye Straw. E. BECKMANN, O. LIESCHE, and F. LEHMANN. **Z. angew. Chem.** xxxiv, 285-288 (1921); **Paper Trade J.** lxxiii, No. 20, 48, 50 (Nov. 17, 1921). The character of lignin extracted from straw is dependent on the method of treatment and of its separation from pentosan and hexosan in the extract. The best method consists in digesting straw with a mixture of 600 cc. of 96 per cent. alcohol and 400 cc. of 2 per cent. sodium hydroxide solution; after neutralization with acid and distillation of the alcohol, the lignin is precipitated by means of hydrochloric acid and a good product is obtained. Considerable divergence exists with regard to the composition of lignin. From determinations of its molecular weight and examination of benzoyl, p-bromobenzoyl, and p-nitrobenzoyl derivatives and sodium salt, the authors conclude that the most appropriate formula is $C_{40}H_{44}O_{15}$. —A.P.-C.

A-6 Manufacture of Sulphurous Acid from Sulphates of the Alkaline Earths. RHENANIA VEREIN CHEMISCHER FABRIKEN A. G. Ger. patent 352,-125. A mixture of alkaline earth sulphate and of heavy metal sulphide, e.g. 5 kilos of anhydrous gypsum, 1 kilo of pyrites and 3 kilos of iron oxide, are heated to 900 to 950° C. —I.G.

A-12 Sodium Silicate as an Adhesive. REX FURNESS. **J. Soc. Chem. Ind.** xli, 381R-384R (Sept 30, 1922). A review covering the advantages, properties and applications of silicate adhesives. The author concludes that sodium silicate solutions can be prepared to meet all the requirements of a good adhesive; that they are superior to animal and vegetable adhesives in that they are fire resistant, do not become rancid and are vermin repellent. They are odorless, produce damp-proof articles, have a relatively high bond strength, and their setting time can be varied over a wide range. They are ever ready, requiring no heat before or during application, and they give consistent results. The apparatus required for their application to wood, paper, etc., is extremely simple. —A.P.-C.

A-14 Microscopic Analysis of Fibers in Paper. Paper Ind. iv, 928f-928g (Oct. 1922). A description of the procedure to be followed in the co-operative study of various methods with a view to establishing a standard procedure. The quick estimation, Gravatt, Spence, Graff, and count methods are being investigated. —A.P.-C.

A-14 Tearing Tester. S. D. WELLS Can. patent 322, 809, Sept. 19, 1922. The clamped paper is pressed against the apex of a triangular shaped piece, the apex being pointed to pierce the material and the sides rounded to tear rather than cut the paper. The tearing device is supported on a resilient member, the displacement of which measures the force required to tear the paper. Means are provided for indicating the movement of the paper in relation to the force necessary to tear it, which gives a measure of the work done in tearing. —A.P.-C.

A-15 Refractive Index and Mounting of Cellulose. JAMES STRACHAN. **World's Paper Trade Rev.** lxxviii, 374 (1922); **Chem. Abs.** xvi, 3392 (Oct. 10, 1922). Cellulose of fibers is doubly refracting and because of this as well as of its minute structure it is extremely difficult to determine the refractive index by the immersion method. Pure cellulose appears to have a refractive index of approximately 1.555 for daylight, so that its index of visibility in Canada balsam is low. For temporary mounts unstained fibers in water or iodine stained fibers in sodium chloride solutions are most convenient. For permanent mounts pure bleached cellulose is best stained with a basic aniline dye and mounted in xylol balsam. Magenta on account of its high refractive index is a suitable basic dye. —A.P.-C.

A-14 Determination of Sizing Quality. F. T. CARSON, Bureau of Standards, Washington, D. C. **Paper Trade J.** lxxv, No. 10, 44-45, (Sept. 7, 1922). The Okell electrolytic method is valuable in helping check qualitative results and in giving information concerning the nature of the absorption process. The original promise of the method for testing and research has not been justified. It is to be considered of doubtful value for the determination of sizing quality. —I.G. (Compare this journal, xx, 500, June 15, 1922.)

B.-Forestry

B-2 Research Work of the Dominion Forest Service. W. G. WRIGHT. **Can. For. Mag** xviii, No. 3, 673 (March 1922). Discussion of the importance of the work being carried out by the Dominion Forestry Branch. —C.L.

B-2 Extensive Planting Plan to Save Ontario's Pine Supply. E. J. ZAVITZ, Provincial Forester. **Can. For. Mag.** xviii, 564 (Jan. 1922). At present rate of cutting virgin white and red pine in Ontario represents 20 to 25 years' supply. The author estimates that for an annual expenditure of not over $200,000; 10,000 acres could be reforested each year, which in 60 years should produce at least 50 million board feet more than the present cut of these species. (See also summary of address by Hon. E. C. Dryry, **Can. For. Mag.** xviii, 605, Feb. 1922.) —C.L.

B-2 The Sycamores. J. S. ILLICK. **Am. For** xxviii, 145 (March 1922). —C.L.

B-2 A Seven Hundred Year Logging Company. A. N. PACK. **Am. For.** xxviii, 195 (April 1922) History and management of the Schifferwald forest, a 12,-000 acre portion of the Black Forest, in Germany, under continuous ownership and production for some 700 years. The forest is perpetuated by wise use. Intensive forestry practice is made possible by the existence of a market for practically the entire cubic content of the tree. —C.L.

B-2 Transplanting. F. L. MULFORD. **Am. For.** xxviii, 238 (April 1922). Precautions to be taken in transplanting trees. —C.L.

B-3 Practical Plan to Replenish the Forests of Ontario R. C. STRICKLAND. **Can. Lumberman.** xlii. 47. (March 1, 1922). The author outlines a system comprising establishment of forest reserves in charge of trained foresters and assistants, intensive protection against fire, cancellation of existing licenses where only small timber remains, and construction of dams to flood hay meadow which would provide fire-breaks and favor the re-establishment of fur-bearing animals. Intensive administration along these lines would be largely self-supporting and would afford protection for large areas of valuable second-growth timber. —C.L.

B-3 Quebec Awakens to Need of More Conservation Can. Lumberman, xlvii, 47, (March1, 1922). An analysis of the forest wealth of Quebec with references to reforestation by private interests and to the provincial nursery at Berthierville. There is need for reforestation on 4,000,000 acres of timber limits denuded by fire. —C.L.

B-3 Flying Service Rendered to Canada's Forests in 1921. J. A. WILSON, Secretary, Air Board, Ottawa. **Can. For. Mag.** xvii, No. 10, 525, (Dec. 1921). —C. L.

B-3 Canada's Gravest Menance is the Forest Fire. C. D. HOWE. **Can. For. Mag.** xvii, No 10, 535, (Dec. 1921). More than 1,000,000 square miles of forest land in Canada have been burned over within the last 75 years. Fire protection is the most vital problem in forestry today. —C.L.

B-3 Bird Guardians of our Forests. HOYES LLOYD **an. For. Mag.**, xviii, 567, (Jan. 1922). Insectivorous birds play a very important part in preventing or reducing the destruction of forests by insects. — C.L.

B-3 Actual Cost of Aerial Cruising R. LECKIE, **Can. For. Mag.** xviii, 572, (Jan. 1922).-C. L.

B-3 Canada Must Take out a Timber Insurance Policy. R. O. SWEEZEY. **Can. For. Mag.** xviii, No 2, 614, (Feb. 1922). —C.L.

B-3 The Railways and Forest Protection CLYDE LEAVITT. **Can. For. Mag.** xviii, No.3, 657, (March 1922). A description of the requirements relative to the prevention and control of fires imposed upon railways by the Railway Commission. In general, the railways are showing splendid results in work of this character. —C.L.

B-3 Cleaning Up Debris in Pine Forests R. D. CRAIG. **Can. For. Mag.** xviii. No. 3, 664 (March 1922). A description of the disposal of logging slash on a pine operation in Northern Ontario. Slash should not be burned broadcast, but should be piled up and burned. —C.L.

B-3 Insect Armies that Follow in the Wake of Fire. J. M. SWAINE, Dominion Entomologial Branch. **Can. For. Mag.** xviii, No. 3, (March 1922).—C.L.

B-3 Some Wood-Boring Insects. FRED J. SEAVER **Am. For.** xviii, 769, (Dec. 1921).—C. L.

B-3 Forest Fires in Canada ELLWOOD WILSON. **Empire Forestry,** i, No. 1, 43, (March 1922).---C. L.

B-4 Progress in Fire Retardant Treatment of Canadian Woods. J. H. CODERRE, Forest Products Laboratories, Montreal, Can. Lumberman xlii, No. 5, 44, (March 1, 1922). Discussion of the need for the discovery of a suitable process for fire-retardant treatment of wood used as a construction material. Promising results have been secured with a treatment precipitating zinc ammonium phosphate in the wood after evaporation of the excess of ammonia. —C.L.

B-4 Timber Testing in India. L. N. SEAMAN. **Empire Forestry,** i, No. 1, 47, (March 1922). Outline of the work of the timber testing section of the Forest Research Institute at Dehra Dun. —C.L.

B-5 The Motor Truck in Forest Operations. F. M. KNAPP. **Can. For. Mag.** xvii, No. 9, 494 (Nov. 1921). —C.L.

B-9 Ocr Yukon, its Forest Wealth and Future Development, H. R. ROWATT. **Can. For. Mag.** No. 9, 471 (Nov. 1921). —C.L.

B-9 The Forest as a Perpetual Wood Factory. C. D. HOWE. **Can. For. Mag.**, xvii, No. 9, 473 (Nov. 1921). "The function of foresters is to improve upon nature as expressed in the forest and guide her into economic channels, just as the farmer has improved upon nature in his work and compelled her to serve his economic purposes." —C.L.

B-9 Dominion Forest Reserves Are the People's Forests JAMES LAWLER. **Can. For. Mag.** xvii, No. 10, 520 (Dec. 1921). The National Forests protect stream flow and provide timber, fuel, hay, pasturage and recreation for the prairie residents. —C.L.

B-9 A Forestry Policy for Canada EDWARD BECK. **Can. For. Mag.** xvii, No. 9, 492, (Nov. 1921) —C. L.

B-9 With a Canadian Observer in Scandinavia, EDWARD BECK. **Can. For. Mag.** xviii, No. 1, 575 (Jan. 1922). A discussion of the power of favorable public sentiment in the building of forest policies in Norway, Sweden and Finland, with a brief account of the status of forestry development; together with a description of the extensive program for reforestation in Great Britain. —C.L.

B-9 Pulp and Paper Requires Permanent Forests. GEORGE McKEE. **Can. For. Mag.** xviii, No 3, 661, (March 1922). —C.L.

B-9 England's New Forestry Policy. A. N. PACK. **Am. Forestry** xxvii, (Dec 1921). A description of the progressive and extensive campaign of reforestation now under way in Great Britain, under the British Forestry Commission. —C.L.

B-9 The Foundation for Forestry in New Jersey. C. P. WILBER. **Am. For.** xxviii, 20 (Jan. 1922). A strong argument for fire protection. The system in use in New Jersey is described and the results obtained are outlined. —C.L.

B-9 The Vanishing Trail. A. N. PACK. **Am. For.** xxviii, 67 (Feb. 1922). A description of present conditions in forest areas in France cut over by the American forestry troops during the war. Regeneration to valuable timber species has been and is being secured by natural means, as well as by replanting and by the sowing of seed. Thorough protection from fire is the foundation of all this. —C.L.

B-9 A German Forester's Views C. A. SCHENCK. **Am. For.** xxviii, 70 (Feb. 1922). A description of the forestry situation in Germany since the war. German forests came through comparatively unscathed. Without her forests Germany would have been beaten in 1915, and had she won the war the German foresters might have claimed that the German forests were responsible for the victory. Forestry in America must be made to pay, or it can not and will not be practiced. Every country has as much forestry as its inhabitants have been willing to pay for. Ninety-five per cent. of all American forestry is fire-protection. —C.L.

B-9 Town Forests. J. W. TOUMEY. **Am. For.** xxviii, 96 (Feb. 1922). A strong and convincing argument for the establishment on this continent of thousands of community forests by villages, cities, townships, schools public institutions, etc. — C.L.

B-9 New York's Depleted Forest Wealth Am. For. xxviii, 209 (April 1922). An analysis of the consumption and actual and possible production of lumber, showing that under management the State is capable of producing enough timber annually to more than meet

(Continued on page 202)

UNITED STATES NOTES

An exhibition of the manufactures of the State of Wisconsin, to be known as the Annual Wisconsin Products Exposition, opens in the auditorium, Milwaukee, Thursday, December 14, and will continue until Wednesday, December 20th. An interesting exhibit of the paper industry has been arranged by twenty-six of the largest paper mills in Wisconsin. The display decided upon by the paper men will be of an educational nature rather than a sales boosting affair. As is usual at educational paper exhibits, a miniature paper making machine will be the center of attraction. The model machine to be on display at this show will turn out a sheet of paper five inches wide. It will also serve to show how paper of various grades and colors is made. One of the things that will be emphasized during the show is the industry's contribution to the State in the way of employment. The steady employment at good wages offered by the mills and the community development of paper mill towns will be pointed out.

Because it had the foresight to stock up before raw material prices soared, The Peerless Paper Box Company, New York City, is now saving its customers much money selling to them at practically the same price basis as when materials were at lower levels. The firm's warehouses and its factory were packed with cardboard and other raw materials months ago in anticipation of higher prices and officials of the company have announced that present prices for boxes will be maintained until this stock is exhausted. So extensive has the business of this firm become that it has been found necessary to rent a new building in which three entire floors will be occupied by the plant. The Peerless Company and its president are pioneers in the paper box business in New York City and numbers among its customers many of the biggest department stores. The equipment and working force can turn out thirty-five thousand boxes per day, including all sizes and descriptions. While the first six months of the present year found the paper box business in an unsatisfactory condition, the last five months have shown a large gain over 1921 for the Peerless Company. Its officials attribute this latter booming of business to better conditions and assert that the renewed activity shows that buying is again on the increase. The manufacture of Christmas boxes and cartons far exceeded last year's business.

Magnus, Mabee and Reynard, Inc., manufacturers and importers of chemicals at New York, have secured an exclusive agency as distributors in the United States of high grade filter papers of French manufacture.

J. E. Smith, of Baltimore, Md., has acquired control of the Uncas Paper Company plant at Norwich, Conn., which was offered for sale at a public auction December 4th. This cleans up the affairs of the defunct Ironsides Board Corporation. Mr. Smith is interested in a number of paper manufacturing establishments, among them being the Marley Paper Manufacturing Company at Childs, Md., which he heads, and the Chesapeake Paper Company at Baltimore, Md. He also owns two paper box manufacturing plants and a paper stock business. The new owner of the Uncas plant said that he expected to have two or more machines running before the first of the year making the old time "Uncas Board." It is Mr. Smith's intention to have F. W. and H. P. Browing become affiliated with him at Norwich. Both were organizers of the old Uncas Paper Company. Mr. Smith plans also to put the mill in shape for the manufacture of high grade manila lined and patent coated board.

Considerable damage resulted from a fire at the plant of the Great Western Paper Company at Appleton, Wis, a week ago. Several buildings were gutted before the blaze was put under control.

Articles of incorporation have been filed with the Secretary of State, Michigan, by the Wolverine Carton Company. Thomas V. Spees and C. U. Clark, Grand Rapids, and W. A. Mockler of Milwaukee, are named as incorporators. The business is capitalized at $300,000.

Work on the specifications for paper for the Government Printing Office was completed December 4. Among the changes understood to have been made, one of greatest interest to paper contractors deals with overweight and underweight of paper delivered at the printing office. The new arrangement will probably be more satisfactory to the paper contractors than the one now in use. F. B. Veitch, chief of the Paper Laboratory of the Bureau of Chemistry, has been named chairman of the Paper Specification Committee.

George W. Mead, president of the Consolidated Water Power and Paper Company of Wisconsin Rapids, and T. W. Brazeau, the company's attorney, have asked the City of Stevens Point, Wis. for cooperation in the development of greater water power. The company is planning to enlarge operations in its plant at Stevens Point, according to Messrs. Mead and Brazeau, the projected improvements may not be feasible unless friendly cooperation for mutual advantage is given by the city.

The Kalamazoo Vegetable Parchment Company has started a papermakers' school, which meets evenings in the company's community house. The text books to be used are those prepared by the Vocational Education Committee of the Paper Industry.

Claude Nicely, of the La Salle Paper Company, Sonth Bend, Ind., was elected Chairman of the newly formed Western Board Division of the American Pulp and Paper Mills Superintendents' Association. The organization meeting of this section, held recently in Chicago, brought a big turnout of paper men and served as an occasion for some interesting and inspiring addresses.

In an announcement to the trade telling of the organization of the Gatti Paper Stock Corporation, Joseph Gatti, formerly head of the Gatti-McQuade Company, states that he purposes continuing all branches of the business as carried on by the latter concern for years until it was forced into bankruptcy recently. The new incorporation, Mr. Gatti says, will begin business without indebtedness of any kind and with ample facilities to give its customers the most satisfactory services in every respect.

In his annual report made public last week, Henry Cantwell Wallace, Secretary of Agriculture, stresses the urgent need of developing a comprehensive forest policy without further delay. The report points out that timber consumption is at least four times as great as forest growing. Five definite suggestions are made for legislation that will provide for forest protection, regrowing and better utilization. Mr. Wallace also recommends the establishment of additional forest experiment stations, especially in the Lake States and in the New England area. "At such stations," he says, "we are able to make close-at-hand studies of matters affecting forest growth which cannot be made so well in any other way."

BRITISH PREMIER'S EMPIRE POLICY

(From Our London Correspondent)

London Nov. 25, 1922

I mentioned recently that there was some hope for industry and trade with the Conservative Govt. in power, in place of the Coalition just turned out of office. Everything points to a revival of interest in the present conditions prevailing, because it is now fully realized that if "the old country" is not shaken up and resuscitated, present evils and set-backs may develop into serious consequences for the Empire as a whole.

"Trade within the Empire" was the slogan after the war. The Coalition Government preached it, but in reality did not practice it, though several efforts were made by prominent people outside official circles to point out the great resources Canada offered and the great need for investing British capital in the Dominion. But there all the talk stopped— and now we are to have a conference; or, at least we are promised one.

Imperial Economic Conference

Mr. Bonar Law, the new Premier, who is a protectionist against the dumping of foreign goods—Empire goods, of course, not included, has stated that he is going to call in the near future an Imperial Economic Conference on Empire Development. He believes in the slogan "Trade within the Empire" and the knowledge he gained, when a business man in a big industry in Glasgow, has helped his views on many subjects. We may assume, therefore, that the outlook is bright and Canada will have a better look-in as a member of the British family circle.

Today the Hon. Peter Larkin, Canada's High Commissioner in London, stated that the calling of a conference shows the broad and enterprising spirit of the Prime Minister.

"Such a conference would undoubtedly encourage trade," remarked Mr. Larkin. "It would induce the interchange of trade in manufactured goods and bring Canada into still closer union with the Motherland by imimproving the markets for the produce of her paper mills, pulp mills, lumber trade, her orchards and farms. We want more markets."

"But you know," he added, "that Canada has taken the lead in promoting trade within the Empire; other Dominions have followed.

"Some years ago we gave the British government a preferential tariff of 25 p. c.—a percentage which was later increased to 33, and which, at the last sessions of the Canadian Parliament, was still further increased. In this way the Dominion has done its share towards fostering trade within the Empire.

"But there is room for still further improvement and cooperation. The last government entered into an agreement with Canada to remove the cattle embargo and that agreement has been ratified by the new government, but the idea that the embargo has been removed is merely a popular fallacy. Legislation is still urgently required."

When the Imperial Economic Conference is called it is hoped that the Canadian representatives on it will not hide their light beneath a bushel. The policy of Australians giving a preference to English and Scottish paper to Canada's detriment—and without acquainting Canada of the fact at the time—wants a little ventilating and some safeguard, or guarantee, given, that one section of the Empire will not trade with another at the expense of a third party. Now is the time to clear the atmosphere, because Canada is an integral part of the Empire, just as much as Australia is and there is no use making "fish of one and flesh of another"—all must be alike on the question of preferences. On this forthcoming conference to be called by the Premier Canada wants strong men and men who will make themselves heard and felt. And it is up to the Canadian pulp and paper men to see that the right sort is selected—and to act immediately.

Another War Tax

The Canadian Chamber of Commerce are now appealing to British Postmaster-General to reduce the postage to Canada to two cents an ounce. At present it is three, but some time ago it was four cents. The Chamber believes that if a reduction was made revenue would be increased. The present rates on letters, books, and printed matter, they say, is hampering with trade with Canada.

Well, the Postmaster-General may have have a soft spot in his heart for Canada, but it is doubtful with the Government's huge expenditure in "mespot." and the Holy Land if they will take the surplus cent off. The defalcations of the last government have to be paid off first.

Some New Politicians

Mr. Harry Becker has been elected member of Parliament for Richmond, and Mr. G. R. Hall Caine, (of the Bay Sulphite Co and a director if Chicoutimi Pulp Co), has been elected for East Dorset.

Mr. Harry Becker's success is popular and we have watched him grow up from youth. What is more, he fought in France and Belgium as a private soldier for three years. It is men of his type that are wanted today because he believes in trading within the Empire.

Paper Testing Methods

(revised and enlarged, 9″ x 12″, 42 pp., in paper $2)

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Sales Manager Thorn, of Price Brothers, Limited, Quebec, is spending some time in Toronto on business.

the needs of the State's secondary wood-using industries. —C.L.

B-9 Simple Forest Conservation A. V. S. PULLING University of New Brunswick. **Am. For.** xviii, 211, (April 1922). A general survey of the field, with particular reference to the use of shingles and substitutes, and of newsprint and other papers. —C.L.

B-9; R-13 Report of Inaugural Meeting of the Empire Forestry Association. **Empire Forestry** i, No. 1, 3, (March 1922). Account of the meeting held at London, Nov. 16, 1921. The organization is an outcome of the Imperial Forestry Conference held at London in 1920. —C.L.

B-9 Forestry in the Empire. R. L. ROBINSON **Empire Forestry** i, No 1, 11, (March 1922) Summary of the proceedings of the British Empire Forestry Conference, 1920. —C.L.

B-9 First Annual Report of the Forestry Commission of the United Kingdom. A. W. BOTHWICK **Empire Forestry** i, No 1, 72 (March 1922). A summary of the report for the year ending Sept. 20, 1920, comprising an outline of the program of the Commission. —C.L.

B-9 State Regulation of Cuttings on Privately Owned Lands. C. D. NEWTON. Attorney General of New York (|' !-13456 123456 123456 ETAOIN AOINNN New York. **J. For.** xix, No. 7, 707 Nov. 1921). An opinion as to the extent of the constitutional authority of the State Legislature to regulate the cutting of trees on private lands, in which the author considers the Legislature is within its constitutional powers to make such regulations when they were proved to be in the general interests of the community. —C.L.

B-0 Trees in Winter H. T. STEPHENSON **Am. For.** xxviii, 79 (Feb. 1922). Identification of trees by winter characteristics. —C.L.

D.-Groundwood Manufacturing and Equipment

D-4 Device for Regulating the Feed of Pistons in Grinders. J. M. VOITH. Ger. patent 350. 543. Same as Fr. patent 532,702. See this journal, xx, 634, July 27, 1922. —I.G.

D-4 Method of Fastening Pulup Stones G. HOHMANN. Ger. patent 357,364. —I.G.

D-5 Process for the Manufacture of Wood Pulp. L. ENGE. Ger. patent 353,105. Attempts to bleach steamed groundwood have not been commercially successful owing to poor results and high cost of bleaching. According to the patent the wood is treated with the bleaching agent directly after steaming, and is then ground. The bleaching liquor can be introduced into the bleaching apparatus after the air has been exhausted from the latter, or gaseous or gas-forming bleaching agents may be used. With aqueous solutions of acid sulphites, for instance, sodium bisulphite, the wood must be allowed to remain for several days so as to complete the action of the chemical, before it is ground up. This may also be applied to unsteamed wood. In either case a very tough fiber is produced. (Compared Eng. patent 169,802. This journal xx, 654, Aug. 31, 1922). —I.G.

E.-Acid Processes of Pulp Manufacture and Equipment

E-2 Utilization of Sulphite Waste Liquors. A. G. FUR ANILIN FABRICATION. U. S. A. patent 1,419,-497, June 13, 1922. The liquors are used as an addition to the alkaline liquors employed in the treatment of animal fibers in the textile industry. —I.G.

E-2 Reduced Sulphite Waste Liquor. U.S.A. Patent No. 1, 327, 862, FRANK E. COOMBS, Jan. 13, 1920. Commercial neutral sulphite waste liquor of 30 degrees Bé is acidified with 0.5 per cent sulphuric acid and iron filings or iron wire is added. The reduction may be hastened by adding a little copper to form a couple. The reduced liquor, after removing undissolved iron and iron salts, is evaporated to 20 to 30 degrees Bé. It may be used as a dye, producing shades of greenish brown on unmordanted wool. The liquor also has considerable insecticidal value. It may be used with the usual spraying apparatus. Retaining some of the original sulphite waste liquor, it adheres to laes, vines, etc. — A.P.-C.

K.-Paper Manufacturing and Equipment.

K-7 Beater. W. LUETZENKIRCHEN. Ger. patent 352,751. The beater is provided with axial introduction of the stuff into the roll. A circular canal is built in the roll which permits the deflection of the stock without any disturbance from the axial to the radial direction. —I.G.

L. — Articles Produced from Pulp and Paper

L-4 Sanitary Cup Making Machine. P. T. POTTS, assignor to VORTEX MANUFACTURING Co. Can. patent 223, 456, Sept. 5, 1922. Suitably shaped blanks of paraffined paper are fed into position between dies which form them into complete, fluid-tight cups and discharge them completed.-A.P.-C.

L-7 Paper Pulp Strip Producing Machine. C. ISSENMAN. Can. patent 223, 627, Sept. 12, 1922. Same as U. S. A. patent 1, 411, 030. See this journal **xx**, 772, Sept. 7, 1922.-A.P.-C.

N. — Power Generating and Equipment

N-4 General Graphical Evaluation of Flue-Gas Analyses. Y. KAUKO. **.Chem. Ztg.** xlvi, 657-659 (1922); **J. Soc. Chem. Ind.** xli, 623A, (Aug. 31, 1922). A theoretical and mathematical paper in which the fuel economy is represented graphically from considerations based on the chemical analysis of the flue gases. -A.P.-C.

N-6 The Electric Steam Generator. HORACE DREVER. Electric Furnace Construction Co. **J. Ind. Eng. Chem.** xiv, 923-925 (Oct. 1922). Brief discussion of the field of usefulness of the Kaelin electric steam generator, its principle and merits. (Compare KAELIN, this journal, xx, 549, June 29, 1922.-A.P.-C.

O. — Water Supply and Equipment

O-3 Removing Iron from Water Without Aeration. W. S. COUTLER. **Fire and Water Eng.** lxxi, 163-168 **Chem. Abs.** xvi, 1999 (June 20, 1922). A description of a deferrazation plant at Hightstown, N. J. The supply contains 4 to 5 parts per million of iron, which is effectively removed (90%) by treatment with lime followed by pressure filters. 400,000 gal. are treated daily at a cost of 0.5 cent per 1,000 gal.-A.P.-C.

R. — General .

R-2 Recent Work In Cellulose Technology. **Paper** xxx, No. 11, 7-11; No. 13, 7-10; No. 15, 14-15; No. 16, 11; No. 20, 16-17; No. 21, 10; No. 22, 17; (May 17, 31, June 14, 21, July 19, 26, Aug. 2, 1922). A review of literature published during 1921 taken from the annual report of the Society of Chemical Industry.-A.P.-C.

PULP AND PAPER NEWS

Mr. George M. McKee has resigned the position of President of the Canadian Pulp and Paper Association. He is leaving Canada, having become associated with a company which has purchased the Ogdensburg Paper Mills, Odgensburg, N. Y. Under the circumstances he felt that he could no longer remain as president of the Pulp and Paper Association. The council have not accepted the resignation, and have cordially requested Mr. McKee to serve out the full period, which will expire in January.

Mr. J. A. Bothwell, manager of the Brompton Pulp and Paper Company, visited Montreal last week.

At the Annual meeting of the Stationers' Association of Montreal, held last week, the following officers were elected: President, Mr. Thomas V. Bell; vice-president, Mr. R. Fortier; secretary-treasurer, Mr. James K. Thompson; executive committee, Messrs. E. Latter, P. Granger, A. Valiquette, W. P. Crites, J. S. Sutherland and G. H. Manning. Mr. J. J. Robson the speaker of the evening, gave a talk on business conditions and principles.

The annual meeting of the Canadian Forestry Association will be held in Montreal on January 25.

Paper Bags and Specialities, Limited, Toronto, has been incorporated with a capital of $100,000.

During October the pulpwood traffic through the St. Lawrence Canal totalled 15096 tons as against 30877 in October last year.

Five more timber concessions have been disposed of by the Ontario Department of Lands and Forests. The largest of them covers a little more than one lot and the timber is said to be of inferior quality, as a result of which prices dropped below previous high standards. One Port Arthur man agreed to pay a total of $2.90 per cord for spruce pulp, $1.90 for other pulp and 50 cents per cord for fuel woods, in Sterling township.

Reports are current in pulp and paper circles that E. W. Backus has purchased the supply of pulp wool on Isle Royal. The island, although only 45 miles from Port Arthur, forms that part of the territory of the State of Michigan, and Mr Backus is reported as having gone direct to the State officials. Confirmation of the report has not yet been secured. Some time ago the sale of 65,000 acres of timber on Isle Royal was reported, the deal being between the State of Michigan and a Duluth firm in which, it is believed, Mr. Backus is interested. Mr. Backus stated in Toronto that the deal was not be personnal use whatever his office might have put through.

Advices from Winnipeg indicate that Manitoba and Winnipeg interests have won their fight for protection in the matter of the Lake of the Woods levels and river power development rights and privileges, which at one time were regarded as menaced by the Backus Books Company and other interests. The draft international treaty, which it is understood is about to be signed provides for an absolute dependable flow of water for the Hydro Electric development by Manitoba and Winnipeg interests.

The Provincial Paper Mills Company, Limited, head office Toronto, has declared the quaterly dividend of 1½% on the common, 1% special dividend, and the 1¾% dividend on the preferred stock, payable Jan 2 to shareholders of record Dec. 15.

R. J. Flynn, manager of the Buntin Reid Company, wholsale paper dealers, Toronto, and Mayor of Weston, was prominent in a celebration in this town on Dec. 6th. in connection with the completion of the installation of one of the most modern Hydro-electric lighting systems in Canada. Hon. Adam Beck pressed the button which released the flood of light.

The directors of the Pacific-Burt Co. of which S. J. Moors of Toronto is president, at a meeting in Toronto last weeek declared the usual quarterly dividend of 1¾% on the preference shares, and a halfyearly dividend of 3% on the common shares. Both dividends are payable on Jan. 2 to shareholders of record Dec. 15. In declaring a 3% dividend on the common shares for the current year the directors have placed the stock on a 6% dividend basis. This is the second member of the Moore group of companies to extend its disbursements to shareholders within recent weeks. Last month final arrears on the American Sales Book preferred were met, and the initial dividend on common was declared at the rate of 8% per annum.

Paper mills in the Niagara Peninsula were well represented by exhibit of paper at the Industrial Exhibition of Local Products held in the armories at St. Catharines during the week ending Dec. 2nd. These making well-arranged and attractive exhibits were the Interlake Tissue Mills Co., Ltd., the Provincial Paper Mills Co., Ltd. and the Kinleith Paper Mills. A featur of the Interlake exhibit was a guessing contest in which visitors were invited to guess the weight of a large jumbo roll of crepe paper, the first prize—a case of specialty tissue papers—being won by Miss M. Haslem who guessed within quarter of a pound the true weight of the roll. The contest created a great deal of interest and the entire exhibition proved a great success.

Practically all last week the contract negotiations between the Hydro Commission and the Great Lakes Pulp and Paper Company, which have as their objective the sale of 15,000 horsepower annually from the Nipigon system, were in progress in Toronto and no official announcement as to the results has been given out as yet. The parties present were A. L. Alstead, on behalf of the company, Messrs McGinnis, Jeffry and Gaby on behalf of the Hydro, and E. Baily, K.C., on behalf of the Province. At the close of the week it was stated that substatial progress had been made. The matter of the price to be paid for the power was gone into and it is understood that other formal difficulties, such as enforceability, strike, and guarantee clauses were smoothed over. It is stated that consideration has been mostly directed to the larger question of a flat rate zone in the vicinity of Port Arthur and Fort William, to which the Provincial Commission is very much opposed, holding, it is said, that Port Arthur's interests would be very much injured. The matter of a site for the mill—Bare Point, near Por Arthur, versus the Mission site, near Fort William—and relative power costs at each point, were also threshed out.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, December 13.—Conditions in the paper trade are satisfactory; there is. of course a tendency to slow down just before the holiday season, but, in spite of that, a fair turnover is being made by most jobbers. In one or two directions there is a considerable activity; taking the market as a whole, however, business is now on a steady basis with prices pretty well established.

General trade reports, both from Canada and the United States, indicate that the outlook for 1923 is good. From the pulp and paper view, we are far more interested in American than in European conditions, although a settlement of the outstanding political questions there would undoubtedly be a very strong factor in Canadian commerce. If we may rely on reports from across the border, the trade situation gives promise of a prosperous 1923, and that will naturally be reflected here.

The newsprint situation shows little change. The increase in circulation and in advertising in the U. S. daily papers is a factor which makes for a continued firm demand, and a great deal more paper would be purchased if the mills could turn it out. Production is increasing, but it is not up to the consumption requirements, and publishers are bound to refuse a certain amount of advertising business, which is, of course, heavy at this season.

The feature of the other paper sections is a rise in the price of wrapping papers. The following are the new quotations: gray rag, 5 cents per lb, ¼ cent increase; manilla, 6 cents, ¼ cent increase, No. 1 Manilla, 7¼ cents, ½ cent increase, Fibre 7¼ cents, ½ cent increase; No. 2 Kraft, 7¼ cents, ½ cent increase; No. 1 Kraft 8 cents, no change. The higher cost of raw material is responsible for the new list. Book papers, writing and bonds are in fair request. The Board mills are still busy, but there are indications that the demand will soon slacken. There is a lull in the buying of roofing felts; waste papers are selling readily, and rags for paper makers are also being well absorbed.

In the pulp market, groundwood has taken another advance and is now up to $45. per ton, with prophecies of $50. being asked. The production is sold as soon as it is manufactured, the low water conditions forcing some mills to buy in the open market. The statistical position is very strong. Owing to the inventory period and to a disposition on the part of buyers to consider the general situation, the call for bleached sulphite is not as active as used, without, however, any falling off in prices. Stocks in Canada are still very light. Unbleached shows little change.

According to some pulpwood dealers, there is certain to be an advance in prices during the spring. Already the tendency is towards a higher level, and it is declared that the available stocks are lighter than is generally supposed. A considerable quantity of wood in the Province of Quebec has depreciated to such an extent as to render it unfit for use. A certain amount of stock bought during the peak of values is now being delivered. The dealers declare that the American consumers who kept out of the market during the early part of the year when prices were low, will have to pay considerably more when they begin to buy.

Toronto Market News

December is panning out a good month in the Ontario paper trade although there are signs of a falling off in trade as the season for inventory taking approaches. Jobbers report more business than they anticipated but do not look for much activity during the Christmas season. The paper mills, for the most part, are running full, but are looking for a slackening off towards the close of the month. In no line of paper has there been any easing off in prices nor is any drop expected. On the other hand increases are looked for in several lines with the turn of the year.

PULP. — The demand for pulp is slackening off somewhat owing to the natural desire, it is believed, to reduce inventories at this time of the year. There are those, however, who profess to see signs of a softening in the pulp market and question whether the lessened demand at present is really seasonable. It is maintained by some that the slackening off in the pulp business is a precursor of a softer market early in the year, although the concensus of opinion is that the present conditions are merely transitory and due to the usual causes at this season. Sulphite pulp is quoted at $90.00 to $100.00 and natural at $65.00 to $70.00. News grade is selling at $55.00 to 60.00 and sulphate at 62.50. Groundwood pulp is still firm at $35.00 to $42.50.

PULPWOOD. — Transportation difficulties have eased off somewhat and freight is now moving fairly freely. This Fall has seen a much larger shipment of pulpwood and other produce from the northern woods to the United States, and word goes out that the general paper situation has improved to such an extent in the big American mills that there is every indication that the camps in the North will continue operation all Winter. Last year, it will be recalled, many of the camps had to be closed owing to slackening business in the American mills, but that was due to general conditions over the line. Now that such conditions have corrected themselves, the situation is much more favorable for the Canadian camps as well as for the railways which have to handle the pulpwood from the North to the United States paper mills. This also appears to be reflected in the improved employment situation in the lumber camps, so that on the whole the trade situation is much better than it was a year ago. A large amount of pulpwood is being contracted for in New Ontario at the present time, but owing to the poor condition of the roads there is practically no hauling under way. If the Ontario Government accepts the proposed scale of prices for power outlined by the Gregory Commission, it is expected that that several additional pulp and paper mills will be erected in the Rainy River district.

BOARD. — The paper box industry is still using considerable supplies of box board and will be until the latter half of this month when they will turn in on their regular lines following the manufacture of Christmas specialties. Board mills, however, are easing off a bit and are catching up with their orders which had gotten considerably behind. Orders of much smaller bulk are being booked as the old year is closing.

WRAPPINGS AND PAPER BAGS. — Business keeps up well in these lines and both mills and jobbers are busy. A branch of the paper bag business that is extremely busy is the flour sack industry which is extremely prosperous. Some mills report being behind from six to eight weeks with their orders. Prices for flour sacks are holding firm and there are prospects of early increases in prices, the American prices having advanced ten per cent recently.

NEW YORK MARKETS

New York, Dec. 9. — (Special Correspondence) — The Federal Trade Commission report on the paper industry issued this week and covering the month of October is the most bullish thus far issued by the Commission this year. A new high record of production was established for 1922 by paper and board mills of the United States in October, during which month a total of 644,267 net tons of paper and board of all kinds constituted the output of domestic plants. This production was some 9,000 tons above the August output, which up to October was the biggest production month of the year, and was 21,000 tons in excess of the September output. The October production also compares with 542,408 net tons produced in October a year ago, 621,964 tons in October, 1920; 616,808 tons in October, 1919; 527,492 tons in October, 1918, and an average monthly output based on reports covering the past five years of 524,342 net tons.

In spite of the heavy production in October, mill stocks of paper declined during that month, thus showing that manufacturers not only shipped out all of their current production during the month but also a part of their surplus holdings of paper.

There is every indication that a good movement of paper of practically all kinds is proceeding steadily. Consumers are buying with greater freedom though, on the other hand, it is true that demand for some kinds of paper has eased off in the past few days, this being nothing more than a seasonable occurrence. Where one grade of paper is in less call, another is wanted by consumers in larger amounts. Newsprint, for instance, is moving in larger volume than probably ever before in the past; there is also an increasing call for wrapping and tissue papers and for fine papers. Building papers have slowed down to some extent, as would be expected at this time of the year, and there is less activity in box boards owing to the fact that the busy season for boards has come and gone.

Pronounced strength prevails in the newsprint market. Publishers continue to seek available supplies of print paper and are snatching any lot to be had for prompt shipment or for delivery over the next few weeks.

Contracting for newsprint supplies in the new year is proceeding and it is understood publishers are in almost every case increasing the tonnage ordered. Certainly the outlook for the print paper industry is bright; judging from present prospects, 1923 should prove to be the busiest year newsprint manufacturers have ever enjoyed.

There has been a firming up of quotations on tissue paper. Most mills quote $1 a ream or very close to many in recent months.

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WOOD PULP

SOLE AGENTS IN U. S. A., CANADA, MEXICO AND CUBA FOR

Finnish Cellulose Association
Helsingfors, Finland

AND

Finnish Wood Pulp Union
Helsingfors, Finland

Book papers are showing increasing activity and a tendency to strengthen in price. Mills in the Middle West are reported sold ahead for some time, and book mills in the East also are operating at a lively pace and seem to be having no trouble finding an outlet for their product. Fine papers are firmly quoted and are moving in larger amounts at present than at any time in several years.

There has been a slight easing off of quotations on box boards. Plain chip has sold down to $50 a ton f.o.b. New York, and news board at $52.50, though some mills have again advanced prices slightly beyond these levels. Demand for boards is nowhere near as voluminous as a month ago, and the cost of waste paper is considerably lower, thereby enabling manufacturers to produce board cheaper than formerly.

GROUND WOOD. — In some quarters it is reported that demand for ground wood has simmered down; in others it is stated that a consistently good movement is still in progress. Some say that western consumers have let up in their buying, presumably owing to improved water conditions which have enabled producers in that part of the country to increase their operations and thereby fill the wants of consumers who for a time had to come East to purchase pulp. So far as can be observed, however, quotations are holding steady. Domestic spruce ground wood is quoted at around $40 a ton at grinding mills and few or no sellers seem willing to accept orders at much under this figure. In fact, some sales at a trifle above $40 have been reported this week though in cases where a low freight rate to the consuming point was involved.

The Federal Trade Commission's report on the wood pulp industry for October shows that mill stocks of ground wood were further heavily reduced in that month notwithstanding that production kept up on a par with that in September. At the end of October mill stocks of mechanical pulp were down to 95,339 net tons, compared with 127,198 net tons at the end of September, and 157,515 net tons at the end of August. October production amounted to 102,934 net tons, against 102,350 net tons produced in the preceding month. The fact that mills used 124,557 net tons in October and shipped out 10,236 tons tells the story of the sharp decline in stocks. These figures show that the statistical position of ground wood is strong indeed.

CHEMICAL PULP. — The market for chemical pulp is quieter than has been noted in some time. Paper manufacturers have stopped buying to a decided degree while evidently having their needs covered for a time and while presumably trying to keep stocks down for inventory. As would be expected, here and there pulp is being offered in limited amounts at slight reductions in price. No concerted downward movement of quotations has developed though sellers are in some cases shading previous prices to move certain accumulations. In other words, the present market is quite characteristics of this season of the year. Sentiment in the trade is confident; nearly everyone — on the selling side at least — looks for pulp prices to advance during the first part of the new year when it is believed consumption will increase and that less pulp will be imported from Sweden owing to the closing of the Baltic. Importations have been heavy recently, and domestic production is large — the latest Federal Trade Commission report showing that 181,708 net tons of chemical pulp were produced by U. S. mills in October, probably the largest output for any month thus far this year.

RAGS. — As the end of the year draws nearer demand for paper-making rags automatically slows down, Consumers are buying in smaller volume than in some time, which is doubtless explained in large part by the effort of paper mills to work stocks of raw material off in preparation for inventory-taking. No further changes have developed in rag prices. The tone is easy in most grades but prices have declined to levels where dealers are opposing any further recession while contending they are unable to realize much profit even under prevailing market values. New cuttings are quotably steady and are marked with a relatively better demand than old rags. Still the uptrend in prices of cuttings seems to have been checked. Roofing rags are in a dull position and sales of No. 1 packing are said to have been made at $1 a hundred pounds f.o.b. New York, and of No. 2 packing at 85 cents and even less. In fact, some felt paper mills say they have bought domestic mixed satinets at 95 cents a hundredweight delivered, figuring out at around 75 cents at shipping points. White shirt cuttings are firm, with dealers asking at least 11.50 cents per pound for No. 1 packing. Washables are steady also at a quotable basis of about 4.75 cents a pound New York.

PAPER STOCK. — A better allround situation has prevailed in old paper this week. Demand from at least some consuming quarters has improved, and while prices have not changed to any material extent, there is a steadier tone in evidence, and, if anything, the tendency is toward firmer levels. Shavings are selling at about 4.25 cents per pound f.o.b. New York for No. 1 hard white, and 3.50 to 3.60 cents a pound for No. 1 soft white. Old magazines are fetching 2.50 to 2.60 cents at shipping points for No. 1 heavy magazines, and around 2.10 cents for mixed books. No. 1 mixed paper is holding steady at an average of 80 cents a hundred pounds New York, as are folded newspapers at $1 a hundred-weight, common mixed paper at 60 cents, white blank news cuttings at 2 cents per pound, No. 1 kraft at 2 cents, and No. 1 print manilas at 1.60 cents.

OLD ROPE AND BAGGING. — Fair activity is recorded in old rope which is moving to paper mills at 6 cents per pound or a trifle below that figure at dealers' shipping points. Supplies of domestic old rope are said to be light though imports are probably a little above an average. Old bagging is in spotty demand and unchanged in price. No. 1 scrap is quoted at between 1.10 and 1.25 cents a pound New York, gunny bagging at around 1.20 cents and roofing bagging at about 70 cents a hundred pounds.

Engineering and Machine Works of Canada, Ltd., Ste. Catherines, have made arrangements with Trimbey Machine Works for the manufacture of their goods in Canada. Among recent orders is a Proportioning Machine for the St. Lawrence Paper Mills at Three Rivers, also the necessary consistency Regulators for this mill, as well as one of the latter for Fraser Companies, Edmunston. The regulators send stock of uniform consistency to the bleachers, or to the proportioning machine, which not only mixes the pulps automatically in the correct proportions, but also adds such filler, sizing, or color as may be required.

CHEMICAL EQUIPMENT ASSOCIATION BEGINS WORK

The Chemical Equipment Association, comprising manufacturers of equipment essential to manufacture in the score or more of chemically controlled industry of the continent, has established national executive offices at 1328 Broadway, New York City.

It has begun active work through a national membership for the fostering of trade in chemical equipment, and for the improvement of practices in the production and distribution of such equipment, and in the performing of engineering services incidental thereto.

Not only does its activity signalize the adoption of trade association methods by the companies constituting the equipment base of the nationally vital chemical industries, but it represents a movement toward manufacturing and distributing co-operation in these same strategic points that has attracted the attention of Secretary of Commerce Hoover, who personally encouraged the organization of the Association and has elicited such comment as this from the New York Tribune, which said, in its issue of November 5th, quoting an officer of the Chamber of Commerce of the United States:

''Such supply company organizations as the Railway Equipment Association, The Motor and Accessory Manufacturers' Association, The Association of Ice Cream Supply Men, the recently formed Chemical Equipment Association, and other groups representing the supply and equipment ends of leading industries, the members of which are manufacturers of miscellaneous commodities, but 'connected with a specific industry,' for market expansion, educational work, publicity, research, credit protection, and prevention of trade abuses is one of the most interesting current trade association trends.''

The Chemical Equipment Association was organized September 12th, 1922, following preliminary activities of an organization committee of representatives of leading manufacturers.

The officers of the Association are: President, Pierce D. Schenck, President, The Duriron Co. Inc., Dayton, Ohio; Vice-Presidents, J. George Lehman, Vice-President and General Manager, Bethlehem Foundry and Machine Co., Bethlehem, Pa.; Walter E. Lummus, President, The Walter E. Lummus Co., Boston, Mass.; Adolph Coors, Jr., Vice-President, Coors Porcelain Co., Golden, Colorado; Treasurer, Percy C. Kingsbury, Chief Engineer, General Ceramics Co., 50 Church St., New York City; Secretary, Roberts Everett.

The directors are: H. N. Spicer, The Dorr Co., New York City; P. S. Barnes, The Pfaudler Co., New York City; Edwin C. Alford, T. Shriver & Co., Harrison, N. J.; T. C. Oliver, Treasurer-General Manager, Chemical Construction Co., New York City; Hamilton Allport, E. B. Badger & Sons Co., New York City.

The Association has already established communication with nearly two hundred of the large industrial associations of the country announcing itself as a source of information in chemical equipment supply matters, and has begun a regular bulletin service to members. The Association is, further, arranging details of a permanent co-operation with the Department of Commerce in the collection and dissemination of vital trade information.

Any cultivator, whether of grain or of character, has need of long patience.

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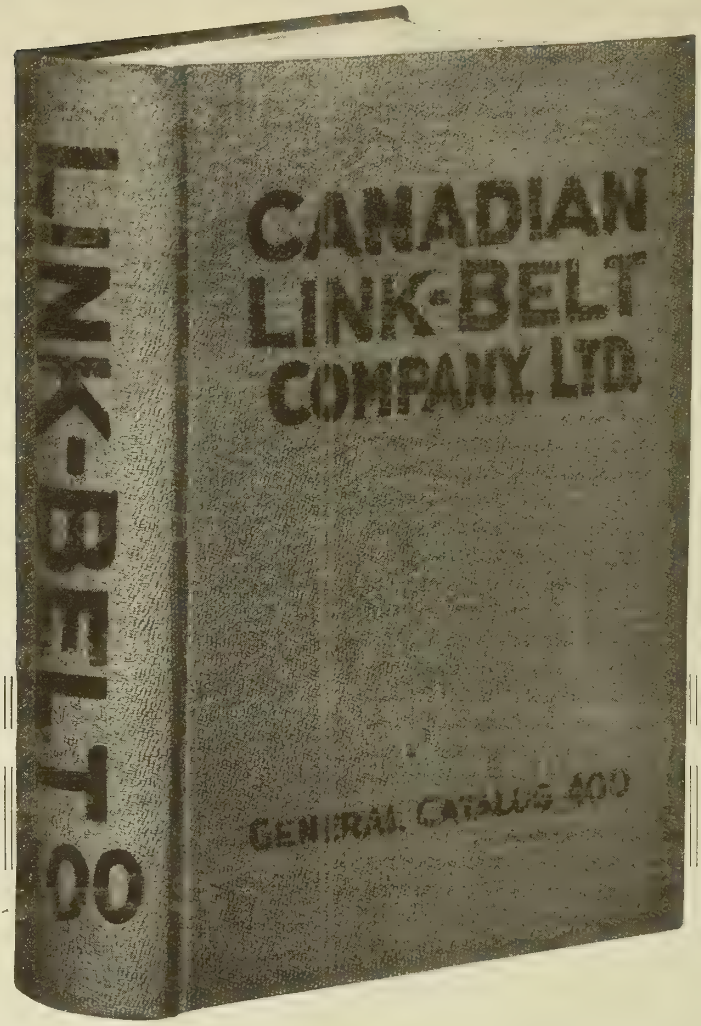

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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A MERRY CHRISTMAS

THE DAY AFTER CHRISTMAS

'Twas the day after Christmas
And all round the place,
Glad smiles of contentment
Encircled each face.

The children were satisfied;
For each had received,
Their wants from dear Santa
In whom they believed.

The grown up folks also
Were happy and glad,
With children enjoying things
Who then could be sad?

May your Christmas this year
Be cheerful and bright
With the joy of receiving
And giving delight.

J. N. S.

ON PROGRESS ROAD

It would not be right to refer to the part of progress as a boulevard, because there are too many obstacles and rough places, twists and turns, even sometimes an apparent reverse of direction in getting to the point aimed at; so Road is a much more appropriate name than Boulevard. Progress Road is one of the few streets which continues indefinitely. The Pulp and Paper Industry has been travelling this road for sometime. For a while back the course has been fairly level but now the industry approaches a relatively difficult hill to negotiate. From the recommendations made by the Research Committee, and by the executive of the Woodlands Section, it looks as if the Pulp and Paper Association would take this hill on high gear.

Progress is not made without effort and while Progress Road seems to have some level places, it seems never to run down hill; in fact, most of it seems to be going up hill, but the Pulp and Paper Industry has never balked at a climb, no matter how steep or strenuous. Like the mountaineer, the Association feels that the stiffer the climb, the higher the point reached, and the better is the view and the outlook.

At the annual meeting of the Pulp and Paper Association, which will be held in Montreal in about a month, two exceedingly important propositions are to be introduced. They are important for two particular reasons; first, because they will involve the expenditure of a lot of money, and second, because they will be important factors in the advancement that the Industry must make in the next few years if it is going to maintain successful competition with other countries manufacturing pulp and paper products. On another page of this issue, both of these propositions are explained in considerable detail. The first one calls for the establishment of a Department of Rrsearch in the office of the Pulp and Paper Association with a director in charge of this work. We have already commented on the proposition in general, and on the qualifications of a man who would be capable of the carrying out of such a program as is presented for the consideration of the annual meeting in January. The estimated budget for such a department is put at $30,000. The second proposition calls for an expenditure of approximately $10,000 to cover the salary and expenses of a man capable of directing and co-ordinating work in Forestry matters. The two propositions are presented rather independently put they should be considered as interlocking. We believe it can truthfully be stated that a point of weakness in the Industry is the lack of appreciation of the mill branch and the Woodlands branch of the problems that each faces, and a lack of mutual understanding of the conditions surrounding each of these departments. With two men, each fully conversant with the problems and difficulties of his own particular end of the business, sitting down together and talking over common and individual problems, there will certainly come forth helpful suggestions from each one that will enable the other to make better progress. There will be no more effective way found to link up woodlands operation with mill operation.

When these important propositions come up for discussion at the annual meeting, every company member of the Association should be represented by someone who is not only fully acquainted with every phase of the questions to be discussed, but who also will have full authority to pledge complete cooperation and support of his concern to the carrying out of the propositions put forth. As is mentioned in the letter from the Committee, the research proposition cannot hope for success unless every member is ready to give its full cooperation and every possible assistance. It means maintaining a complete and permanent open door on research problems and research work of common interest to the industry. No amount of money will accomplish the ends desired unless both management and the Research department in the different mills enter heartily into the spirit in which the Research committee has worked out and proposed the plan that is to be voted on at the meeting. There is no doubt whatever, but that success will come in proportion to the enthusiasm that the various mill managements put into the endeavor. We cannot understand how any member of the Association can fail to see the advantage of giving their heartiest support to the establishment and maintainance of this Research department. In a later issue, we shall hope to comment a little more extensively on the relation between this Research department and other organizations interested in the common problems of the utilization of cellulose.

The affairs of the forests have been given a great deal of publicity lately, and it is not too soon to give close attention to these matters. The forest has, for too long, been left to take care of itself. Nature is a very kind old lady who will do a great deal for the man who will help her along, but anyone who steps on her corn is likely to get kicked in the shin with her other foot. That is just about the situation in wood using industries. They have been stepping on Nature's corns by cleaning out the best timber, stripping, burning and neglecting forest lands, and unless the operators mend their ways very soon, they will be walking with a distinct limp through the necessity of conducting their woodlands operations at an unnecessarily high rate of expense. The establishment of a Woodlands Section secretary, in the office of the Association, is, to our mind, the best single step that the industry can take at the present time toward the realization of woodlands conditions, and getting organized for the necessary steps that will later have to be taken in order to keep our industry on a permanently productive and successful basis.

We can't see how the Association can afford to turn down either one of these propositions.

FINLAND'S BIRTHDAY

On December sixth, Finland celebrated her fifth anniversary of national independence. For many years the Finns were unwilling subjects of the Czar of Russia. But this sturdy young nation of strong, hardworking people is now well on the way to a firm place in world affairs. Finland is a country of farms, forest and water power. The lumber, and pulp and paper industries are already well developed, and the cautions but determined progress that is being made will write **Suomi** in larger letters in the world's trade in these products.

COBWEBS

Contact of a lifetime with the sea and its people makes the Editor especially sympathetic toward those who suffer hardship from the perils of the deep. Our heart is touched by the news of the wreck of the tug Reliance and the loss of four lives in the disaster. Winter on Lake Superior is a terrible foe and many brave men wage the battle. Some are lost. May God receive them and comfort the ones they leave behind.

TOO MANY PULP AND PAPER MILLS IN CANADA

Editor Pulp and Paper Magazine

Sir, —

I read an article in the Toronto Globe of the 6th inst. containing the statement by Mr. Hall Caine of London that the forest resources of Canada are not yet even scratched. I am rather at a loss to understand what could have prompted Mr. Hall Caine to make such a misleading and entirely erroneous statement if this article quotes him correctly. Certainly not a knowledge of the facts. If the forest resources of Canada are not yet even scratched, then of course all our forest conservationists, including our good Canadian Forestry Assocaition, are simply wasting their time, and I have wasted some sixty thousand dollars during the past year alone in my endeavour to prolong the life of our rapidly disappearing wood supply, as I have felt it was the most important work that I could do for my country. Statements like those of Mr. Hall Caine's, when read by people outside of the country who are not familiar with the situation, do a great deal of harm. Mr. Hall Caine speaks of developing or extending our network of railways. Where would he propose these extensions? We have already more railways in Canada than we can support. There is now a network from the Atlantic to the Pacific, barring the barren Labrador country and the frozen scrubby north country. We have a fair sample of what that means in the recent abandonment of the Hudson Bay Railway, a line through a country so devoid of wood growth that Government reports stated there was not sufficient timber along the entire route to furnish wood for construction of the road,and the fact that the road has since been abandoned fully proves that these reports were correct.

A Canadian paper manufacturer told me the other day that there are already twice as many paper mills in Canada as these should be. Another official of one of the larger paper companies wrote me that we must all use every effort to see that there is not another pulp or paper mill built in the East. I have just received a report from New Brunswick from one of my cruisers which states that more than sixty percent of the spruce over large areas has died in that Province during the past summer, so that previous reports given out earlier in the spring as to the amount of damage from insect pests will have to be doubled and possibly trebled.

The statements that I have made as to our critical forest situation are based on my own personal investigations, so that I know whereof I speak, and I have made the offer to the Government that if they will appoint an unbiased commission I will take them on a four months' cruise over our ''unscratched forest resources'' at my own expenses, and if they do not report conditions worse than I have ever stated them to be, that I will never mention the question of forest conservation in Canada again

Frank J. D. Barnjum.

Christmas is here
The season of cheer
Our Greetings to all of our friends,
And those they hold dear,
A Happy New Year,
And prosperity till the year ends.

Routine Methods for the Examination of Wood-Pulp Adopted at the Forest Products Laboratories of Canada

By E. PARKE CAMERON, B.Sc.,

Chief, Division of Pulp and Paper, Forest Products Laboratories, Montreal

A considerable amount of work has been done, both in the United States and in Canada, by the Technical Committees of their respective Pulp and Paper Associations, on the development of a standard method for testing pulp, particularly in relation to its strength. Up to the present time, however, no definite standard has been officially adopted and the following routine method has been developed at the Forest Products Laboratories of Canada in order to standardize their own procedure until such time as a recognized method is adopted by the industry.

The complete test includes the following determinations:—

(a) Fibre Length,
(b) Strength: Beaten and Unbeaten,
(c) Bleaching,
(d) Colour.

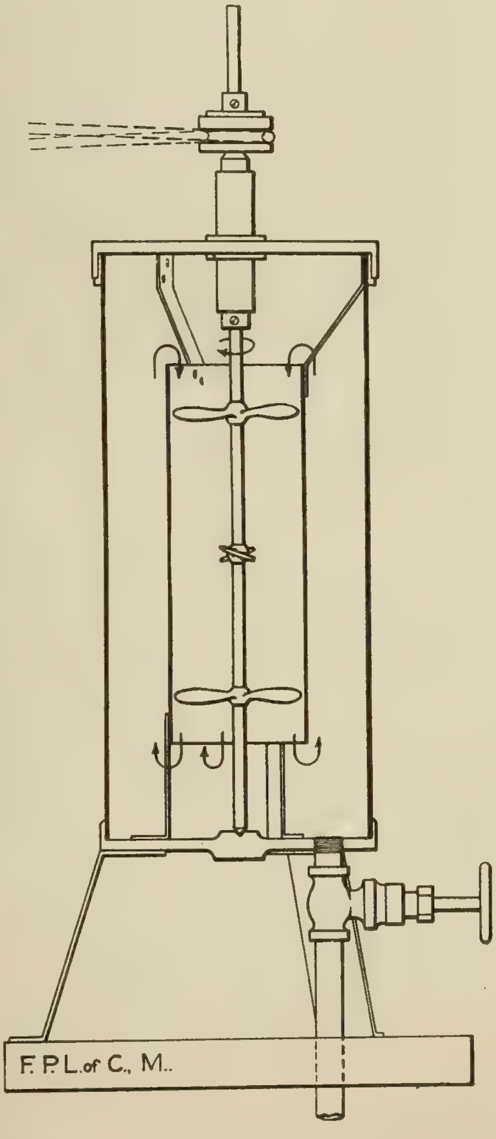

Fig. 1. — Pulp disintegrator (diagrammatic)

DETERMINATION OF AVERAGE FIBRE LENGTH

Sampling and Preparation of Material

When the material to be examined is received in the form of slush there is no necessity for much preparation for microscopical examination, but when it arrives in the form of sheet or lap care is taken to take samples from points as far apart as possible. Three samples one quarter of an inch square are taken.

The samples are placed together in a test-tube with water and well shaken in order to separate the fibres. A few drops of some aniline colour are added to stain the fibres and make them more distinct when seen under the microscope.

A small quantity of the disintegrated pulp is placed in a drop of water on a 3 inch by 1 inch glass slide and the fibres are distributed uniformly by tapping the under side of the slide. This procedure is found superior to the use of needles which are liable to tear the fibres. The drop or film of watery pulp is covered with a thin square cover-glass. The cover-glass used is 22 millimetres square and is sufficiently large to cover thirty fibres or more.

Apparatus

The miscroscope used for the purpose of measuring the fibres is provided with a "two-inch" objective and a × 7.5 eyepiece. On the diaphragm of the eyepiece is placed a glass scale known as an "eyepiece micrometer scale". This scale is divided into millimetres and tenths of a millimetre, each millimetre being numbered. The length of the tube of the microscope is adjusted until two major divisions in the eyepiece scale covers the image of one millimeter on a scale placed on the stage of the instrument. The micrometer reading gives thus twice the actual size of the object measured and is halved to obtain the correct figure.

(a) Measurements and special precautions

Measurements are made of sixty fibres on two or more preparations made as described. If there is little variation in the length of the fibres and if the average fibre-length from one preparation does not differ from that of another by more than ten per cent the average length of the sixty fibres is adopted as the average fibre-length of the sample. If, however, there is considerable difference between the lengths of individual fibres the number of measurements is increased to one hundred.

Where there is a difference between the average fibre length of the preparations fresh slides are prepared. Special precautions are taken to ensure the placing of a fair sample of the fibres on the slide. The longer fibres are usually more matted together and the shorter fibres loose in the water. Where the proportion of short fibres in the pulp is high this proportion is stated in the report.

(b) Determination of the Strength of Pulp

A complete determination of the strength of a sample of pulp must include tests made on both beaten and unbeaten material. The general procedure for both of these tests is identical, the stock in the "Beaten" test however, being subjected to a standard beating treatment before being made up into the sheet on which the test is carried out. For this reason the "Unbeaten" test will be described in detail first, and the points of difference between the two will be discussed later.

"UNBEATEN" TEST

Preliminary Treatment of Sample

The sample of pulp for testing may be received in any of the various forms in which it appears in the mill, viz: slush, wet lap, pressed, machine dried, etc., although the work is usually carried out on lap or sheet pulp. A suitable means of distintegrating the pulp when in this form is of the first importance and the following method has proved very satisfactory in a large number of tests.

The sample of pulp as received is torn into small pieces in a bucket of warm water (a preliminary period of soaking aiding this operation to a considerable extent, especially if the sample has been machine dried) and is then transferred to the disintegrator.

The disintegrator consists of an outer cylindrical copper shell closed at the bottom by a heavy cap. A smaller copper cylinder open at both ends is mounted centrally in the larger cylinder, thus forming a central tube through which the stock is circulated. The circulation is brought about by three high-speed propellers spaced equidistantly down the inner tube, the propeller shaft being carried on a thrust bearing on the heavy cap of the outer shell. A central shaft-bearing is also mounted at the top of the outer shell and the driving pulley for the propellers is situated immediately above this bearing. Fig. I is a diagrammatic sketch of the apparatus and Fig. II shows the complete installation. The propeller shaft is driven at a speed of 1700 r.p.m. and requires a $\frac{1}{4}$ H.P. motor.

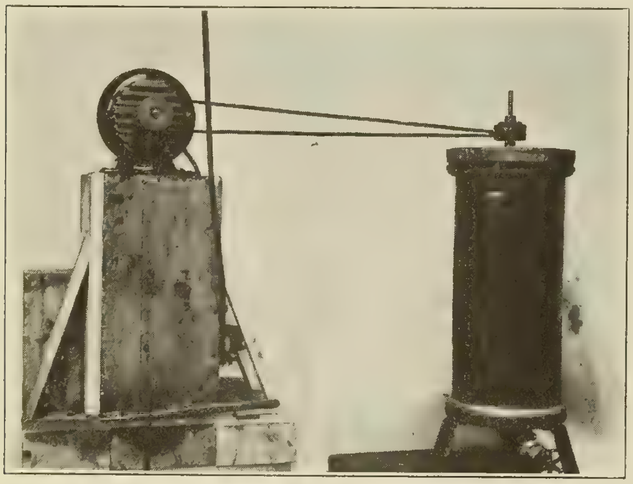

Fig. 2. —— Pulp disintegrator and motor

The stock is treated for 5 to 10 minutes in this apparatus, the length of time being dependent upon the initial state of the sample. As the apparatus disintegrates the pulp without any appreciable beating action a variation in the time of treatment does not introduce any error into the test. After the sample has been thoroughly disintegrated the charge is dumped by opening the discharge valve at the bottom of the apparatus and the disintegrated stock is caught in a small fibreware tub. The charge of the disintegrator is approximately 200 gms. of air-dry pulp which is amply sufficient for all tests.

After being dumped the stock is somewhat diluted and its consistency accurately determined as follows: — 1000 gms. of the diluted stock is accurately weighed on a large chemical balance and the fibre collected on a large Buchner funnel, filter paper being used as the filtering medium. The pat thus formed is removed from the filter, a piece of fine mercerized cotton placed on each side of it, and pressure is applied with a hot iron until steam ceases to be driven off. Ten minutes drying in an electric oven at 100-105 deg. C. after this treatment is sufficient to bring the pat to oven dryness. The use of the iron decreases the time required for drying very considerably and the mercerized cotton has the advantage of not adhering to the pat. After the pat has been dried in the oven it is placed in a previously tared weighing bottle, cooled and weighed. From this weight the consistency of the stock is calculated. From this calculated consistency the amount of water necessary to bring it to 0.5 per cent. consistency is determined and the dilution carried out. The stock is then ready to be made into the standard sheets used for the tests.

Test Sheets

The apparatus used for making the test-sheets is a Sheet Machine[*] made with a few minor alterations from the patterns of W. G. Wilen (Wayagamack Pulp and Paper Company) and described by him in the Pulp and Paper Magazine of Canada, January 20th, 1921.

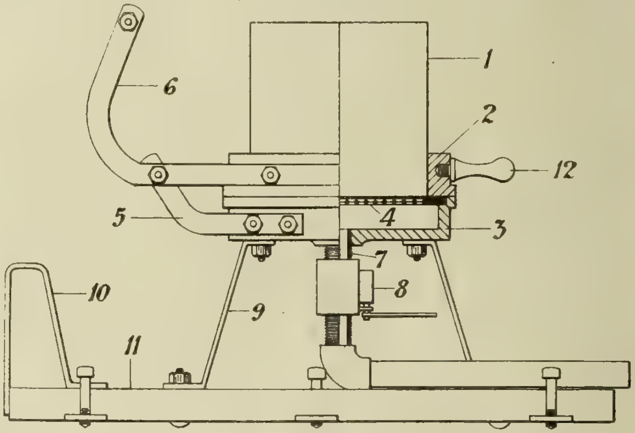

Fig. 3. — Sheet Machine (Drawing)

It consists essentially of two brass castings (Fig. III. 2 and 3) the adjoining faces of which are machined to a watertight fit. To the interior of the top casting is soldered a sheet-brass box, the interior dimensions of which are 8 inches x 8 inches x 8 inches with both top and bottom open, the whole forming the deckle box of the apparatus. The lower casting is fitted with a water outlet (7) to which is connected a quick opening gate-valve, (8) and discharge pipe. The interior of the casting is slotted to take the screen plate (4) which is made up of a $\frac{1}{4}$ inch accurately planed brass plate with $\frac{3}{8}$ inch holes drilled and countersunk. This plate is covered, first by a 14-mesh wire screen and then by a 60-mesh screen soldered and sewn on so that it lies perfectly flat. The screen plate in this apparatus is easily removable for cleaning and repair, this being an advantage over the original design in which the screen plate was soldered directly to the casting. The deckle box is fitted with a lever bar (6) which is hinged to the fulcrum bar (5) of the chamber box casting, thus providing an easy means for removing the deckle box in order to couch the sheet off the wire. A stop (10) is used to hold the deckle box in the open position and a handle (12) is used to swing to deckle box open. The total suction head is eight inches (top of screen to centre of discharge pipe) which is ample for the formation of sheets from all but very heavily beaten stocks. The complete installation is shown in Fig. IV. The operation of the machine is as follows:—

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[*] An improved machine is now made by John Date, Concord Street, Montreal.

1000 gms. of the diluted stock (or one litre) is transferred to a fibre-ware bucket, diluted to approximately three litres with water and poured into the deckle box of the apparatus, care being taken that the discharge valve is closed. After the eddy currents have ceased the discharge valve is opened and drainage commenced. During drainage the surfaces of the two castings should be watertight. The sheet having been formed on the wire, the deckle box is thrown back and the sheet couched off on napless felts using a large wooden rocker as the couching medium. The felt with the adhering sheet is then placed on a brass plate ready for pressing and the next sheet formed on the machine. After six sheets have been built into a pile in this way, the top one is covered with another felt, another brass plate placed on top of all and the whole placed in the press. The press used is an ordinary old fashioned hand letter-press, the sheets being given the maximum pressure possible by this means for two minutes. After being pressed the sheets are dried in the air in a large drying rack (Fig. V) sufficient time being allowed to insure their being absolutely air dry. The sheets are then cut accurately to size 4 inches x 7 inches and weighed on a chemical balance to the nearest milligram. After being weighed the sheets are transferred to a "constant humidity" chamber where they are left for a period of 5 hours in order that they may contain a constant percentage of moisture at the time of testing. The humidity chamber used consists of a large dessicator, the bottom chamber of which is filled with a 43.5 per cent solution of sulphuric acid which concentration gives a relative humidity of 50 per cent. at 25 deg. C. Very accurate control of the temperature is not necessary as a variation of 5 deg. or even 10 deg. does not cause any serious alteration in the relative humidity.

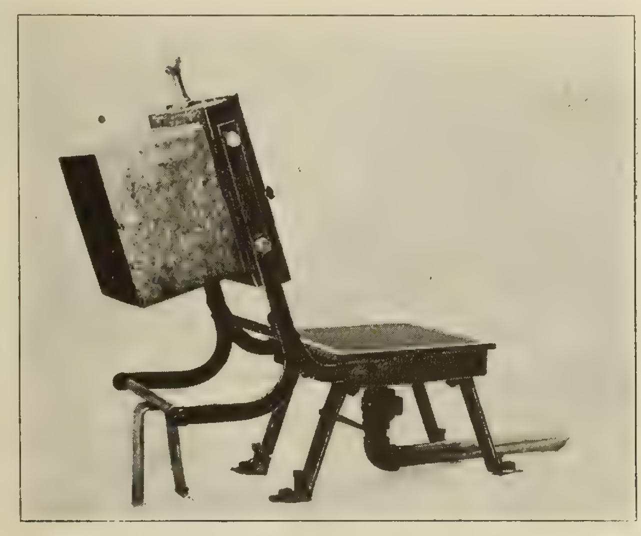


Fig. 4. — Sheet Machine, with deckle box raised

After conditioning in the humidity chamber the sheets are tested for bursting strength with a Mullen tester, five bursts per sheet being taken and four sheets used to determine the strength of the pulp.

The strength is calculated as "Percentage Strength" and is derived from the bursting tests in accordance with the formula:—

$$\frac{\text{Aver. bursting strength (Mullen)}}{\text{Ream weight}} \times 100 = \%\ \text{strength.}$$

The ream weight used in this equation is the calculated weight of 500 sheets each 24 inches x 36 inches of the test material. This ream is the same as used in measuring newsprint.

"Beaten" Test

This test is identical with the "Unbeaten" test with the exception that before the stock is made up into the standard test-sheets it is given a standard beating treatment. The beating treatment is that adopted by the Committee on Sulphite Pulp T. A. P. P. I. and described by them in their report of 1916 (see Paper, November 6th 1916). The procedure is essentially as follows:—

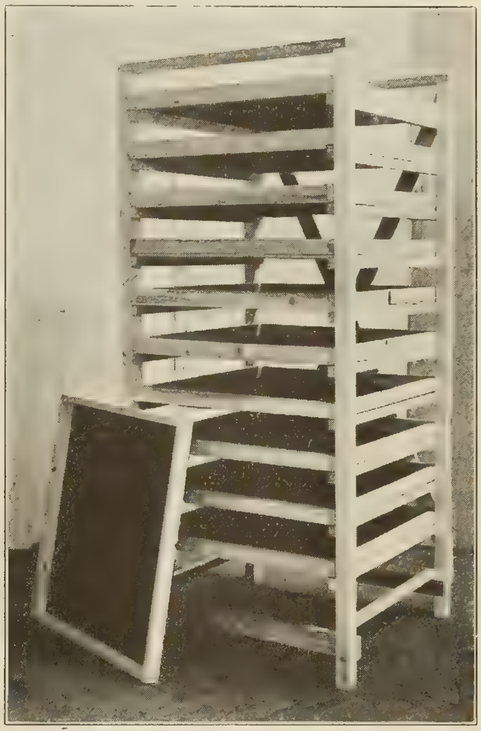


Fig. 5. — Rack for drying test-sheets

The equivalent of 100 gms. of air-dry pulp taken from the prepared slush stock is accurately weighed and diluted until its total weight is exactly two kilograms. This stock is then transferred completely to the ball mill (Jar mill "C" Abbe Engineering Company, Fig. VI) 1780 ccs. of pebbles added, the top securely screwed on and the mill started. The speed of the mill is 50 r.p.m. and the time of beating 50 minutes. After being beaten the stock is washed clean of the pebbles and is placed in the disintegrator where it is given 5 minutes treatment to reduce the balls of stock formed in the milling. The stock is then diluted directly to 0.5 per cent and made into the standard test-sheets as in the unbeaten test. The remaining procedure is identical in the two tests.

(c) Bleaching Test

The equivalent of 100 gms. of oven-dry fibre taken from the slush stock is weighed and the "bleach figure" determined as follows:—

Bleach Liquor

Commercial bleaching powder is triturated with water and the mass diluted and allowed to stand until the excess lime has settled out. The clear liquor is then drawn off into a glass stoppered bottle for use. The liquor is standardized each time a determination is made, using N/10 thiosulphate solution.

Determination

The equivalent of ten grams of oven-dry pulp is introduced into each of three quart sealed jars and the mass diluted to approximately 6 per cent consistency. Volumes equal to 10, 15 and 20 per cent bleach are added to the jars an allowance being made for the water so introduced in the dilution of the original pulp. The jars are tightly closed and vigorously shaken and placed on a water bath maintained at 45 deg. Centigrade. From time to time the jars are shaken and may be tested for unconsumed bleach by removing a drop of liquor on the end of a glass rod and placing it on starch-potassium iodide paper. The samples are given a constant time of bleaching of 3 hours after which the pulp is filtered through mercerized cotton in a Buchner funnel, dried and weighed. When the test paper shows that all the bleach is not consumed, the filtrate is treated with potassium iodide, the free iodine titrated with N/10 thiosulphate solution, and a deduction made from the original amount of bleach in order to determine the actual bleach consumption.

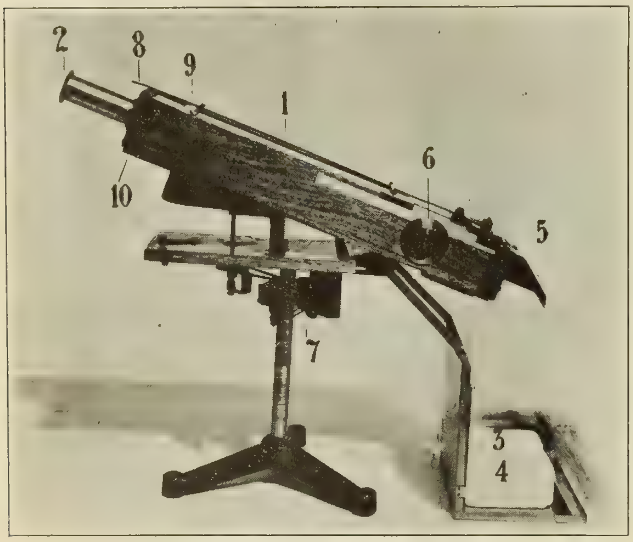


Fig. 7. — Hess-ives tint photometer, for measuring color of pulp

The difference in the weights of the sample before and after bleaching gives the loss on bleaching. The bleached pulp is made into sheets, which are dried, cut to size and examined for colour.

(d) Determination of Colour

The instrument used to determine the relative colour of the samples is the Hess-Ives Tint Photometer, the general description and operation of which is given below.

The body of the instrument, Fig. VII (1), is fixed. At its upper end is a telescopic eyepiece (2) and at its lower end are two blocks (3 and 4) of magnesium carbonate, the colour of this substance being the standard pure white.

A mirror (5) is set at the proper angle to receive light reflected from these blocks and to transmit it through the body of the instrument to the eyepiece. The light-field seen through the eyepiece is divided vertically through the centre, each half of the field receiving its light from one of the magnesium blocks.

A milled head screw (6) operates a shutter which permits adjustment of the two halves of the field to equality as regards illumination preliminary to using the instrument.

A small electric motor (mounted at 7) revolves a mixing wheel which insures even distribution of light over each half of the light-field.

By means of a lever (8) a shutter at the front of the body is operated to regulate the light which one magnesium block (4) reflects to one side of the light-field. This lever, which permits the entire range of control from full opening of the shutter to complete closing, moves across a scale (9) from which the exact degree of opening may be read directly as a percentage.

A colour screen (10) is inserted in an aperture at the upper end of the body below the eyepiece and may be moved at will. The screen is made up of one section each of pure red, pure green and pure blue-violet.

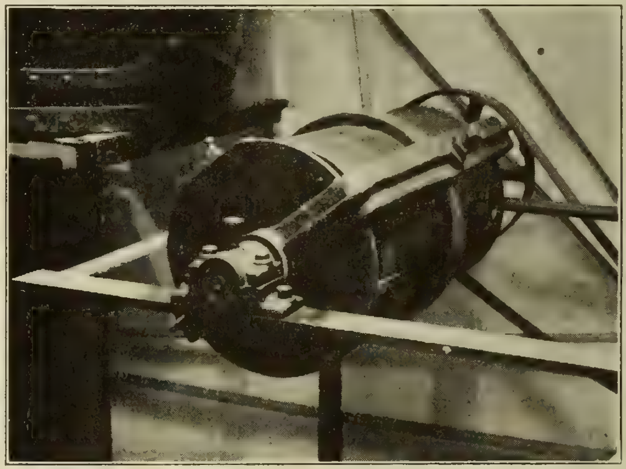


Fig. 6. — Ball mill, for beating samples of pulp

To operate the instrument the motor is started and the lever (8) shifted as far as possible to the left. The colour screen (10) is removed and by looking through the eyepiece a circular field divided by a vertical line will be seen. If flicker is apparent, the motor speed must be adjusted by shifting the electrical resistance until all flicker disappears. This adjustment must be made without the colour screen in place.

The two halves of the field should now appear evenly and equally illuminated. If they do not, the calibrating milled head screw (6) must be adjusted until the illumination is equal, a condition which will be indicated by the practical disappearance of the dividing line.

The sample sheet is then placed upon the block (3) and the colour screen is placed in its first position. The field will appear red, the half field at the left showing darker than at the right because the right hand half field presents the pure red reflected through the colour sscreen from the dead white block (4).

The lever is now shifted towards the right until the matching of the two halves of the field is indicated by the practical disappearance of the dividing line. The matching point is most readily found by first shifting the lever beyond the matching point, so that the right hand field is darker, and then bringing it back to rest at even illumination. The scale reading is then noted. This process of measurement is repeated for green by pushing the colour screen into its second position and the measurement of blue violet with the screen in its third position.

The scale reading for each of the pure colours is one hundred, so that pure white has a measurement, according to this method, of three hundred. The sum of the three readings taken, subtracted from three hundred, gives the difference from pure white of the colour of the sample under examination and hence is a measurement of its colour. This is known as the "parts black" and is recorded as such.

J. R. WALKER HEADS POWER DEVELOPMENT

The devolopment of 50,000 horsepower of electricity on the Riviere des Prairies by the damming of the river just below Visitation Island will be started by October next according to the order-in-council which has been passed by the Provincial Government of Quebec granting a sixty year lease of the river rights to the Back River Power Company. This lease is now in course of preparation and provides for the payment of a rental to the Provincial Government in addition to an annual charge of 50 cents per horse-power.

The project has been under discussion since 1918 when it was laid before the cabinet under Sir Lomer Gouin. Since that time various delegations have been consulted, including the Harbor Commissioners, the city of Montreal, representatives of all the parishes affected on both sides of the river, and the riparian owners.

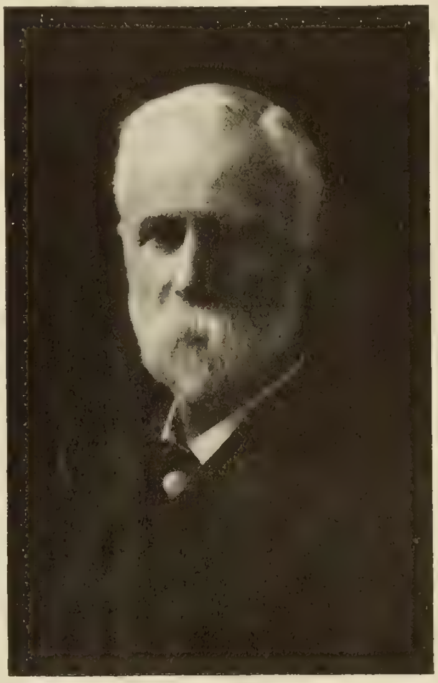
25 Foot Head

The scheme provides for the damming of the river from a small island marked on the maps as Cheval de Terre Island and Cedar Island, which is just below Visitation Island, across to St. Vincent de Paul side, the power house being built on the northern extremity of the dam. The embankment will be built along the north shore of Visitation Island, from the western end of which there will be a dam built across to the island of Montreal just above the Roman Catholic Church. From there a high embankment five feet above the new level of the waterway which will be created, will be constructed along the Montreal shore line to just beyond the Sacred Heart Convent, at about the junction of Stanley Park Avenue and Saint Charles street.

The dam will be of such dimensions that it will provide for a head of water of 25 feet, and it will impound the waters of the river to such an extent that the Sault au Recollet Rapids will completely disappear, and in their place will be a big surface of water with very little current. The level of the river will be affected for four miles back from the dam, reaching back to the C. P. R. bridge.

Mr. Walker's Vision

The Back River Power Company has as its president J. R. Walker, who for many years has operated the little factory situated on the bridge which connects Visitation Island with Sault au Recollet. Several years ago a law was passed by the Legislature giving the company power to develop the Back River, and it has been the cherished scheme of Mr. Walker to see this effected. Now he and his sons, together with one or two other interested persons have got their project in such order that they have secured the necessary lease from the Government.



Mr. J. R. Walker

The directors of the Back River Power Company and J. R. Walker, Alfred Gifford, Arthur Patterson, W. E. Walker, and George P. Walker, all of Montreal, and the engineers for the scheme are T. Pringle and Son, Limited.

Before any of the actual construction work can be started however, the company are obliged, by the order-in-council, to make satisfactory arrangements with the City of Montreal regarding the disposition of the sewerage that enters the river near the dam, and it is proposed to carry out a scheme of pumping that will ensure that there is no accumulation of sewage at the bottom of the river, a sufficient current being maintained in the stream to carry it away without any danger to the public health. Furthermore the promoters have to satisfy the Provincial Board of Health that there will be no contamination of the water owing to the changing of the conditions of the river.

In the third place the company has given an undertaking that it will protect the rights of all riparian owners that may be affected by the scheme, and pay them any damages that may be caused to their property by the pounding back of the water. There will be no public inquiry before the putting of the scheme into effect, the company have to satisfy all parties interested before they can start, and under the terms of the order-in-council the work has to start by next October and be completed within a period of four years.

It is estimated that the carrying out of the development scheme will cost between six and seven million dollars.

Whrite your name with love, mercy and kindness on the hearts of those about you and you will never be forgotten.

"CO-OPERATION AND COSTS"

By C. A. JASPERSON, President Cost Association of the Paper Industry

As the incoming President of the Cost Association of the Paper Industry, I wish to direct my first message primarily to the Chief Executive or Manager, and try to impress upon him the ipotance of becoming a member of this Association, if he is not already a member, why his membership is necessary and what we hope to accomplish.

The question has often been asked, "What do I get out of the Association?" When an executive asks this question, I cannot help but feel he is looking at this important association work from a narrow viewpoint; either he does not understand or does not sense the ultimate results which are sure to be accomplished.

For the past twenty years the Company with which I am connected has been interested in getting a system perfected which would not only show the total cost to make the various kinds of paper, but the cost per ton of each kind of paper made. I have spent a great deal of time and money visiting other mills, comparing systems affecting costs. Because the mills I visited had cost systems, I was under the impression most mills were more or less informed as to their costs.

Four or five years ago I became interested in cost association work and I soon learned I was mistaken in assuming all mills had at least the semblence of a cost system. When I found how small a number of the mills had an idea of what it cost them to make a particular kind of paper as it ran over their machines, I determined to give what time I could toward helping mills know their costs.

I believe the American manufacturer is what we term a good loser. When bids are asked on a particular kind of paper and a manufacturer secures the order, his competitors take it for granted he has taken the order on a basis which will net him a reasonable profit. They can do nothing but sing his praises and assume he has secured the business on a legitimate cost basis. However, when it is later learned he had no idea of what it was going to cost to make that paper and he had taken the business on the assumption, "If the other fellow can make it for that, so can I," then it is that the "milk of human kindness sours within our bosom." It is the purpose of the Cost Association to do what it can to teach the uniformed how to arrive at true costs and bid intelligently.

We have members in our Association who have good cost systems and because they feel that cost association work does not particularly interest them, think very little can be gained by sending representatives to attend Conventions. Such mills are to congratulated in having accountants who can perfect satisfactory cost systems. However, I wish to urge upon these mills the necessity for their continued support in the Cost Association work; the manufacturer who does not know his costs needs a campaign of education, and he is a constant source of annoyance because of the quotations he makes. We need the intelligent co-operation of every person engaged in this highly important work. The enthusiasm and interest in cost work and its direct beaing on the efficiency and prosperity of the paper industry as a whole, can best be obtained through such an organization as is now functioning. I am asking the aid of those leaders in cost work to attend our Conventions that we may all learn from one another.

I cannot put too much stress on the importance of getting support from the mill with a cost system, and the mill without a cost system, as it is only with proper financial backing that our organization will be able to send out accountants in an advisory capacity to give such help as is necessary to get mills lined up with good cost systems. This should prove constructive, as it will have a tendency to eliminate destructive quotations. Unintelligent bidding is apt to be disastrous for mills that are not equipped with good cost systems.

The President and the Executive Committee of this Association without expectation of reward, are giving their time and money toward developing this MOST IMPORTANT PHASE of the paper industry. The ultimate goal in mind is to teach true costs, thus eliminating unintelligent competition.

We are coming to realize that this progress cannot be accomplished in a year or two, hence we need the continued support of all the mills in the paper industry. My personal plea is that we place the cost work on a higher plane than it has ever been before; to do this we must retain the mills that are now members and we need to urge the real advantages of our Association upon those mills that are not now affiliated with us.

ANNOUNCEMENT OF BRITISH INDUSTRIES FAIR

That the Canadian Chamber of Commerce in London has decided definitely to take space at the ninth annual British Industries' Fair, to be held in London and Birmingham from 19th February to 2nd March, is the information received by cable by F. W. Field, British Government Trade Commissioner at Toronto. The Chamber of Commerce will organize sections of the Canadian manufactures both at London and Birmingham and desire the co-operation of Canadian manufacturers in order to make their representation as comprehensive as possible. Applications for space should be sent to the British Government Trade Commissioner at Toronto.

The British Industries' Fair is the largest annual trade fair in the world. It surpasses in the number of exhibitors and diversity of products any other trade fair of its kind. Buyers from all the principal markets attend the Fair. This is, therefore, an excellent opportunity for Canadian manufacturers, who have an article for export, to get in touch not only with buyers in Great Britain, but also with buyers from many other countries who visit the Fair to make purchases there.

The British Industries Fair is not an Exhibition. It is a Trade Fair, to which admittance is restricted to trade buyers. Everybody at the Fair is there on business, and Exhibitors and buyers are consequently able to transact their affairs unhampered by crowds of sightseers.

In addition to organising the Fair the Department of Overseas Trade (which is a Department of the British Government) places its resources at the disposal of both buyers and sellers. A fully staffed office is opened in the Fair, where officers specially qualified to advise in connection with all the trades represented may be consulted, and where information on all matters affecting commerce throughout the world, such as tariffs, shipping, transport, etc., can be obtained.

Among the trades represented at the London Section of the Fair are various branches of the Paper Industry.

PULP CARGO BATTERED IN STORM

The Shipping Board steamer Belvidere from Helsingfors, with a cargo of wood pulp, reached port last week, several days late, leaking and with deck fittings loose after buffeting heavy seas and a hurricane of 70 miles an hour off Cape Race last Sunday night.

Important Points of Cr. P. & P. A.

Two very important subjects will come before the annual meeting of the Canadian Pulp and Paper Association — a proposal to appoint a director of technical research and a proposal for the appointment of a director of woodlands research.

With regard to the former, it is proposed to appreciate the sum of $30,000. At a meeting of the Executive Committee on November 1st, a memorial on the subject was considered; this was signed by Mr. O. F. Bryant, chairman of the Council of the Technical Section, and Mr. C. H. L. Jones, chairman of the Committee on Technical Research. The memorial was as follows:

"As you are aware the question of the establishment of a Department of Technical Research, as one of the functions of the Association, has been under consideration for a number of years. Efforts have been made at various times to co-ordinate the research work carried on by members of our Technical Section with various government agencies, such as the Forest Products Laboratories in Montreal, but without entirely any tangible result.

"For a time it appeared that the Dominion Government might establish a Bureau of Technical Research at Ottawa in which our own industry, with others, would be afforded an opportunity to be represented. Legislative authority to that end was sought but failed.

"Under these circumstances your Committee on Technical Research and the Council of your Technical Section, in joint meeting assembled, have given consideration to the requirements of the situation and beg to advise that, in their opinion, the time has arrived for definite and independent action to be taken upon the part of the industry looking to the inauguration of work of the character described.

"The plan proposed by the Joint Committee is as follows:

"The appointment of a Director of Research, to be attached to the Association's present headquarters, whose work shall be carried on under the direction and with the co-operation of the Technical Section.

"No question of an exprimental staff or the establishment of a laboratory is involved in the project, the main function of the Director being to co-ordinate and assist in research work desired by any individual or group of mills and to use whatever facilities may be available for that purpose.

(For illustration, as has been pointed out, should the kraft mills decide that it is desirable to investigate a means to do away with recovery fumes, the Director would become the medium through which the co-operative efforts of the kraft mills in carrying out experimental work would be co-ordinated and directed. The mill laboratories would provide the facilities and when the experiments had reached the practical or near-practical stage, if ever, the trials would be made at which ever kraft mill was most available. The mills directly interested would bear the expense involved other than those directly connected with the employment of the Director. As with the kraft mill problems so with those of all the various branches of the industry. In the same manner the proposed Director would link in with the work of the technical department at the mills on special research problems. He would also act for the Association in co-operating with government laboratories and other outside agencies. His duties, furthermore, would include promoting and maintaining interest in the Technical Section as an active force in the development of the industry.)

"The Joint Committee realizes that the success of the proposed department will rest upon two factors. First is the personality of the man chosen by the Director.

"The other factor upon which the success of the proposed undertaking depends is the loyal and willing co-operation of the mills. The Committee believes that it can count upon this united co-operation and support with entire assurance. The Committee further believes that the benefits to be achieved would quickly dispel any lingering doubts the members might entertain as to the practicability and wisdom of the undertaking.

"While the Joint Committee is unable to state with exactitude the probable expense involved in inaugurating the Research Department it believes that provision should be made for an amount not exceeding thirty thousand dollars for the first year and respectfully recommends to the Executive Committee of the Association that an item for that amount be included in the budget for the forthcoming year."

The Executive Council passed a resolution approving of the report of the Joint Committee and instructing the Ways and Means Committee to make provision for the necessary appropriation in next year's Budget.

If the proposal is sanctioned, the various sections will be assessed as under, in addition to the assessment for ordinary purposes, Board, 2c per ton; book, 3c. chemical pulp 2c; coated 3c; mechanical pulp 1c; miscellaneous, 2c; newsprint 2c; sheating 2c; tissue 3c; wrapping 2c; writing 3c.

At the annual meeting of the Woodlands Section, the Association was asked to consider the appointment of a practical forest engineer as the permanent secretary of the section. This subject was taken up and a circular letter addressed to the members, those companies operating their own woodlands, it being pointed out that the estimated expenditure would not exceed $10,000 per annum.

"The proposal is that a competent forestry and logging engineer shall be employed to give his entire time and services to the Woodlands Department. His duties, briefly defined, will include—

"(1) Taking general charge of the activities of the Woodlands Section, maintaining headquarters at the offices of the Association in Montreal and working in co-operation with and being responsible to the Association's executive.

"(2) Holding himself available for personal consultation and assistance whenever called upon by any member in meeting problems arising out of forestry or logging operations.

"(3) Keeping in personal touch with all new developments and putting into practical form the results of his observations for distribution to the members.

"(4) Gathering information, that may be of benefit to the members wherever it is available, and generally keeping them informed on all progressive measures affecting forestry and logging.

"The Woodlands Section and the Executive Council do not regard the proposal in the light of an untried innovation or experiment. The American Paper and Pulp Association, two years ago, segregated its Woodlands Section from its other activities and put an expert in charge, with admittedly good results. The Executive believe that the important relation borne by the Woodlands Section to the industry as a whole justified the proposed undertaking. They invite the members interested to give it their earnest consideration.

"As stated, it is proposed to meet the necessary outlay by an assessment distributed among the members operating their own woodlands, pro rated on a similar basis to that applied to the regular annual assessments.

The response to this circular, while not unanimously favorable, was, nevertheless, such as to encourage the Executive Committee of the Woodlands Section to believe they are justified in asking the Association to put into effect the coming year their proposal for the appointment of a Director of Forest Research. They, therefore, propose to ask the Association at the forthcoming meeting to allocate $10,000 for that purpose. The Committee's suggestion is that if the Association votes to raise thirty thousand dollars for research work, as proposed by the Committee on Technical Research, that one-third of the amount ($10,000) be applied to Woodlands research work in the manner indicated by their recommendations set forth above.

In support of their suggestion the Committee has furnished the following statement:

"The Woodlands Section of the Canadian Pulp and Paper Association has now been in existence for five years, and has succeeded in bringing together men interested in the operating and forestry departmnts of the various companies, but beyond arousing a certain amount of public interest, no practical results have been obtained.

"The Woodlands Section of the American Paper & Pulp Association is, on the other hand, younger than our own, but has carried out work of the utmost practical importance to the industry. Its bulletins on information collected and collated from the various companies have been of the greatest help to all those interested in woods operations, and its recent work on the standardization of specifications for buying pulpwood has been a notable achievement. During the past year it has succeeded in raising $15,000.00 to be spent by the United States Forest Products Laboratory in a study of the various rots and fungi which attack timber, both in the woods and on the log piles, and this study will ultimately give information as to what wood can profitably be taken out of the woods, and what must be left because rot has proceeded too far to permit of the wood being used in the grinders or the digestors.

"The excellent work done by the American Section has been due entirely to its having an active, resourceful and energetic secretary, who is a trained forester and understands the problems which affect the industry. The attitude of our Association in regard to everything that will increase the efficiency of manufacturing processes, of cost accounting and the education of the employees, show that it is fully alive to the necessity for resesearch which shall have practical results. We are, however, in the operating and forest management ends of our business in the same position practicaly in regard to methods that we were in 25 or 30 years ago. There are many problems of utilization, measurement of wood, transportation, loss from sinkage and driving, which demand solution, and it would greatly cheapen the cost of our logging operations and would lead to much more intelligent and better handling of our woodlands, when it is considered that on the woods operations of a company more money is spent each year than any operations in the mill, and that there is a great lack of technical control in these operations. Studies carefully made by a man with technical training and practical experience, would effect very large savings, and might suggest new methods of transportation and utilization which would have far reaching results.

"We do not hesitate to say that as the forest is the basis of profitable conduct of all our pulp and paper mills, that it is far more important that money be spent on this end of the work than on any other."

LOCKOUTS AND STRIKES

The value to any party, direct or indirect, of lockouts and strikes is very hard to appraise in precise terms. It is sometimes claimed that as a strike has resulted in an increase of wages, it has therefore been successful, no account, however, being taken of the wages lost during the period of idleness, nor of the loss of trade occasioned thereby. This subject formed the topic of Lord Askwith's inaugural address delivered at the commencement of the 169th session of the Royal Society of Arts in November. Few people, all will admit, are as well versed in the labor developments in this country as Lord Askwith, and his review of the social movements of the last one hundred years is very interesting. Lord Askwith considered most of the important strikes and lock-outs which have occurred during this period, and attempted to show what the gain or loss was in each case. The gain is very small at the best, and in most cases it is negative without doubt.

It is impossible to arrive at any financial value, and this Lord Askwith did not attempt. Rather, in the perspective of time, did he attempt to mark proximate effects on subsequent events. In some cases it is pointed out that efforts on both sides were wasted, and nothing tangible resulted from a dispute, to either side. In other cases strikes failed, and in others brought with the final terms rather unexpected conditions. In still other instances the effect was most felt a long while subsequent to the dispute. Actual progress in development was due fifty or so years ago. Lord Askwith considered, much more to the efforts of men who aimed at equality before the law, and the treatment of violence as part of the general criminal law, than to any practical value of strikes and lockouts. In 1867 before a Royal Commission a union leader stated that they believed all strikes were a complete waste of money, not only to the men, but to the employers. Since then there have always been a few independent leaders who have warned the unions against precipitating strikes, but too often more advanced opinion has carried the day for the time being. Subsequent history has frequently proved, however, the incorrectness of the latter form of leadership, the result of which has not seldom been that nothing has been gained, while the union funds have been exhausted. — Engineering (London).

TO YOU

It isn't the man who smiles that counts,
When everything goes dead wrong;
Nor is it the man who meets defeat,
Singing a gay little song;
The song and the smile are well worth while,
Provided they aren't a bluff,
But here's to the man who smiles and sings,
And then—PRODUCES THE STUFF.

—Henrietta Heron

"BILL" WRITES OF WIRE TROUBLES

Dear Editor,

Dr. Buck's article in your publication of the 7th of December, on "Why Wires 'Let Go'" is an interesting and instructive essay: and gives all us Papermakers an idea of the experiences and troubles the paper manufacturer as well as the wire manufacturer have with wires especially at the seams.

Our friend, the Doctor, has picked the usual weak spot where wire trouble occurs, and the writer has for years past, with other paper makers, given this one question more thought and study than any other part of machine clothing. A long life to the wire is important, both from the standpoint of production and financial returns. The paper manufacturer often asks, "Who is to blame for wire trouble, the wire manufacturer or the engineer designing the paper machine? They believe someone is to blame, but who?" Can they both be to blame for the cause? Many will say yes. Many a good wire has been spoiled and the wire manufacturer blamed, when he is blameless. Like many other branches of the Paper trade, machine designers and wire makers have never seen the importance of co-operation, while without a question no two interested in the successful running of the paper machine should believe more in the policy of reciprocity. When they study the problem together you will see quite a change in our present day Fourdrinier.

For years the writer listened to arguments on the subject of wires, but arguments never get to the root of the evil, and to do this it becomes necessary to study the travel of the wire as it is passing over the various units of the Fourdrinier part. In doing this, in a short time many causes will come before you, but one feature will be especially noticed. This point is the suction boxes, and 90 per cent. of wire troubles are caused by these boxes being improperly arranged or arranged as they are now on nearly every paper machine in operation. This arrangement is the cause of troubles which can be best illustrated by Fig. 1 showing the relative position of the various suction boxes:—

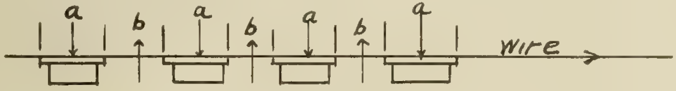


Fig. 1.

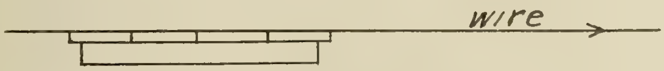


Fig. 2.

By this arrangement, which is general you have suction box covers of about 7″ wide and a space between the covers of from 2″ to 5″ wide. This space or opening, between the boxes, gives, when the wire carrying the web of paper passes over it, the opportunity of vacuum produced by first suction box, to be broken, and a new vacuum must be produced at each box. The downward suction at each cover *a* and the upward pressure of the air *b*, and by taking into consideration natures hatred of vacuum, it can be readily understood how this counter motion works on the wire. It is a hammering process which though slight, is continuous, and as the seam is the weakest point it is the first to let go; the faster the speed of the wire the quicker it will happen.

This method of arranging the suction boxes has been changed by a few mills and an increased life of wire has been pronounced. The new arrangements of suction boxes should be as shown by Fig. 2. (See also article on "Wear of wires", this magazine, Dec. 14, 1922.)

By this arrangement you will see that the covers of the suction boxes are all close together and there is no breaking of vacuum as the wire travels over them and the pounding is done away with as the wire travels with an equal pressure over all the boxes. This latter arrangement has added from 25 to 50 per cent. to the life of the wire.

The information gained by observing the features illustrated has inspired one paper manufacturer to design a Fourdrinier part without any suction box. The experiments he has made prove he can deliver paper dryer from the couch than when ordinary suction boxes are used. This is a radical departure, but is right as it will enable running at a speed much higher than now being obtained, and will give a simple and compact Fourdrinier.

The wire maker has come to realize as well as the average machine designer that they must work together; and by the co-operation of a papermaker and wire salesman they will have done our manufacturers a lasting benefit.

Yours,

Bill the Papermaker.

P. S. If above information is interesting I would be pleased to write about wire trouble caused by Dickle straps and aprons.

* * *

Dear Bill,

Thanks very much for your letter; we would like more of the same kind and hope you will write about the other troubles. If you don't see this note, let us know and we'll send you a copy of this issue

Yours truly,

EDITOR.

PROSPECTS ARE GOOD

William Hamilton Co., Ltd. builders of pulp mill machinery, state that prospects for new equipment in the Pulp & Paper Industry how a decided turn for the better, and while enquiries are increasing lately more orders are also being closed, and it certainly looks as if the upward trend had started at last.

Besides several water wheel orders closed recently, including the turbines for the Backus Brooks Company of Fort Frances, and Kenora, they have for the following equipment on order:

No. 2 Jordan Engine — Westminster Paper Company, Vancouver.

Two Shartle Stuff Pumps, Agitator Equipment, and Pulp Mill slasher for the new Mill of St. Lawrence Paper Mills at Three Rivers.

One Shartle Pump, agitator equipment, tank & heater for Mansons Ltd., Hawkesbury, Ontario.

90″ heavy disc chipper and (5) 44″ disc slab chippers for Fraser Companies, Chatham, N. B.

This concern will also furnish the complete log haul-up slasher, pulpwood conveyor and transmission equipment for the new cutting-up and barking plant of Howard Smith Paper Mills at Gaspé, Que., which is quite a large installation.

The Hamilton plant running full time with about 75 per cent. of normal staff.

K.-C. PARTNERSHIP DISSOLVED

The Pulp and Paper Magazine is advised that the Messrs. George Kilberry and John Corcoran, who have been carrying on a consulting business relating to mechanical problems of design and operation of equipment have mutually agreed to dissolve the partnership on Dec. 30. Neither has announced future plans.

FOUR LOST WITH SPANISH RIVER TUG

(Canadian Press Despatch)

Sault Ste. Marie, Michigan, December 18. — Four persons lost their lives when the tug Reliance was wrecked in a storm on northern Lake Superior December 13th it was learned Monday. A wireless message from the tug Gray, which, with the Favorite, went to the rescue of the 27 persons aboard the Reliance, said all had been accounted for except the four, who were swept from the deck of the small craft as efforts were being made to launch lifeboats in the high sea.

Those lost were Captain John McPherson, of the Booth Fisheries, Sault Ste. Marie, Mich., a passenger on the Reliance; Fred. Regan, Gus Johns and an unidentified man, a Finlander.

Johns was a member of the Reliance Crew and Regan was a forester in the employ of the Superior Paper Company.

The Finlander became ill when taken on the tug and died of exposure after being taken to Rowe Island by those who escaped.

The tug Gray, which today took twenty-three survivors of the disaster, is tonight sheltering from a blinding blizzard at Gargantua. The rescued party is aboard, but will be taken as soon as the weather permits to a point opposite Mile 102, on the Algoma Central Railroad, known as Boissineau's camp, where the first party from the Reliance found succor. From there they will be sent four miles to the railway and will continue to this city.

The rescued party will not be called upon to suffer a continuous trip on Lake Superior, as the tug has yet to pick up some lighthouse keepers.

The tug Favorite, which arrived at the scene of the wreck shortly after the Gray, is at Whitefish Bay further down the lake. Details reaching this city are fragmentary and are being relayed through the wireless station at Whitefish.

The Survivors

The saved include: Charles Currie, Sault, second engineer; Victor Lindback, St. Joseph's Island, deckhand; Elmer Gordon, Thessalon, wheelsman; John Cadotte, Garden River, passenger; Fred. Gardner, Gananoque, passenger; Eugene Longpre, St. Jerome, Que., passenger; Ernie Murphy, Thessalon, passenger; Mr. and Mrs. Jack Harten, St. Joseph's Issland, cooks. Walter Longpre, St. Jerome, Que., cousin of Eugene Longpre; John Corbett, Sault, fireman; Bert Hanes, Sault, fireman; Capt. Williams, Sault; George Harrison, mate, St. Joseph's Island; Herbert Harrison, deck wheelsman; Norman Stoate, Toronto, wireless operator; Walsh, chief engineer; William Gould of St. Joseph's Island, fireman.

The announcement by the Spanish River Pulp and Paper Company, said that, in addition to the crew of 14, the Reliance carried 20 lumberjacks, an official of the company's forestry department, and a fisheries company agent who had been picked up by the Reliance on its last trip to the lumber camps.

Survivors Tell Story

When the Reliance left Gargantua at 7.45 a.m. Wednesday, December 13th, there was a heavy fog. At about 9.30 in a blinding snowstorm, she struck. Nobody could see the length of the boat at the time. A heavy sea was running from the southwest, the result of several days' gale. Just that morning a light wind had set in from the east, off the Algoma shore.

It was this light east wind that fooled Capt. Williams. When the first boat was in the water he told the crew that the east wind would soon knock the sea down, but in ten minutes after Engineer Currie's life boat had left with its nine people, the wind had again settled into the southwest to help blow up the sea that was running.

"That was the reason more men did not jump," said Currie, "no sooner the lifeboat was landed than the Reliance rolled over on it, the bow of the lifeboat being caught under the steamer's guard rail and partly filled."

Gambled With Fate

The wrecking of the Reliance, that occurred off the Lizard Islands, was the result of a gamble with fate on the part of those aboard the tug. After lying to in a sheltered cove for three days in the hope of riding out the storm that was sweeping the lake, Captain Williams found his supplies of food and fuel almost exhausted. The lake mariners elected to tempt fate and breast the blizzard, rather than chance death from starvation.

Four hours after the anchor had been hoisted the Reliance was dashed against the rocks and her wheel disabled. The craft filled rapidly. Just before the wireless was put out of commission the operator flashed a single call for help. It was this call, received here, that instigated one of the thrilling rescue attempts in the history of the lakes.

Divide Into Groups

According to the story of the survivors, the crew divided into groups shortly after the Reliance was wrecked, and set out in lifeboats. The survivors, under command of Charles Currie, second engineer, of Sault Ste. Marie, took the lead and soon left the other groups that lingered near the Reliance.

After fighting zero weather, and storm waves, the party landed on the shore, near Batchawana Bay, where they built a fire and recuperated. They then started a weary march, climbing high icy bluffs, crossing two rivers and wading in snow up to their waists most of the way.

Jack Harton and his wife, cooks on the Reliance, who were members of the party, broke down when Mrs. Harton lost her shoes. A fire was built and Harton directed the men to continue their journey, saying he and his wife would remain at the fire, and that it was no use for the entire nine to perish. The men left the Hartons. Four miles farther they found a lumber camp, where they received shelter. A party from the camp rescued the couple.

After spending two days at this camp the party went to Agawa.

PRICE BROTHERS DECLARED DIVIDEND

Price Brothers and Company, Limited, has declared a dividend of one-half of one per cent., payable upon the capital stock of the company for the quarter ending November 30th, 1922, to holders of stock record December 18th, 1922. This dividend will be payable January 2nd, 1923.

Forget past triumphs if they make you proud; remember them if they make you strong. Forget past failures when the trumpet calls; remember them when you are prone to boast.

British Trade News

(From our London Correspondent)

London, December 2, 1922. — The new members of Parliament — who knows but that they might be Premiers some day! — are telling their experiences to reporters and through the course of speeches. Mr. Harry Becker, owing no doubt to the name of Becker being closely allied since 1914 to finances and financial schemes, says that when he became a fully fledged M. P. several people wrote him letters asking him to pay their rents. Mr. G. R. Hall Caine, who is stated by an interviewer to have a special knowledge of Canadian pulp and paper industries, speaks hopefully of the Dominion's future. He says there is enough spruce in Canada to last for generations and Quebec offers the soundest openings for those with surplus money for investment. Incidentally he says the French-Canadian labor of the province is good and honest—without extremist views. (See letter on page 2010.)

Becker & Co., Limited

I mentioned last week that Messrs. Becker & Co., Limited, were offering for sale £300,000. 7 p.c. 5-year secured notes at 99 p.c. Becker & Co., Ltd., are business merchants, manufacturers, importers of wood pulp and other raw materials used in paper manufacture and they constitute the largest undertaking of the kind in the world. They have also controlling interests in subsidiary companies operating in France, Italy, Norway, Sweden, the U. S. A. and Canada, whilst connections and agencies have been established in the Argentine, Brazil, Mexico, Chili, China and Japan. The firm is an exceptionally strong one and when the offer was made to the public in London it was over subscribed in a few hours. The directorate today include, Sir Fred. Becker, (chairman and managing-Director), Thomas Becker, (Accounts), George Buchanan (Sole manager), Jos. Lyddoin, Edw. B. Montesole (Finance), G. R. Hall Caine, M.P., (Canadian and U.S.A. affairs). Good dividends, usually 15 p.c. are paid, free of taxes, and the profits have risen from £70,279 in 1916-17 to £142,033 in 1920-21 and £80,235 in 1921-22. The Preston Steam Navigation Co. Ltd., which is now amalgamated with Becker & Co., Ltd., pays a 25 p.c. dividend, free of taxes, and the recent offer of 5 years secured Notes was to provide additional working capital, to purchase more tonnage, and otherwise augment to company's interests.

Huge Contracts

Amongst the "Assets and Liabilities" set out by Sir Fred Becker are added "$1,473,600 7 p.c. Collateral Trust Bonds of the Saguenay Pulp and Power Coy, converted at $4.44 to £ at par, specifically charged under present issue, £331,891." It is explained that Becker & Co., Ltd., have entered into contracts with the Saguenay Pulp and Power Company and the Bay Sulphite Company for 1,000,000 of mechanical pulp and 700,000 tons of sulphite over 10 years and have resold the whole to the principal paper makers and newspaper proprietors of the United Kingdom and France. In order to obtain these contracts Becker & Co., Ltd., furnished part of the additional working capital required by purchasing $1,473,600 (value at 4.44 to the £ equal to £331,891), short term Bonds of the Saguenay Pulp and Power Company and have been given administrative control of the Company during the term of the contracts. The Bonds are repayable in five equal annual instalments beginning in 1923. The net assets of the Saguenay Pulp and Power Company are sufficient to cover the short term Bonds more than four and a half times.

The Saguenay Pulp Coy.

Some interesting information is set out concerning the Saguenay Pulp and Power Coy, "the controlling proprietors of the Chicoutimi Pulp Company and other subsidiary and associated companies, from Mr. J. E. A. Dubuc, and Mr. G. R. Hall Caine, directors and members of the committee of management. The share capital consists of $6,000,000 authorised common stock, which has been issued and the same be said of $3,500,000 6 p.c. cumulative preference stock. Under the heading of "Loan capital" there is this statement:—

	Authorised	Issued
6½ p.c. Serial Gold Bonds.	$5,500,000	5,289,600
7 p.c. 5-yr. collateral Trust Bonds (Series 1923-7) repayable at par in equal amounts commencing 1st July 1923, of which Becker & Co., hold $1,473,600	3,200,000	3,200,000

A replacement series of Trust Bonds (1928-32) to the value of $3.200,000 may be issued only as the present series (1923-7) is paid off with the consent of the majority of the existing holders. The fixed assets (excluding timber lands) which comprise freehold lands, mills, buildings, plant, machinery, water power, docks, piers, tugs, etc., etc., have been valued. The value of the company's interests represented by mortgage bonds, stocks, shares, etc., based upon this valuation in 1920 and upon the annual accounts as at 31st Dec. 1921 are as follows: — The Chicoutimi Pulp Coy, and other subsidiary companies (excluding timber lands) $8,370,562; 534,416 acres freehold timber lands (sale prices have been as high as $26 per acre and not lower than $10 per acre) at $10 per acre, £5,344,160; 1,043,221 acres leasehold timber lands (sale prices as high as $12 per acre and not lower than $4) at $4 per acre, $4,172,884. Making at total of $17,887,606 — less 6½ p.c. serial gold bonds and accrued interest put at $5,461,772. Total $12,425,834 to which is to be added cash proceeds of $3,200,000 7 p.c. Collateral Trust Bonds ($3,040,000) bringing the surplus assets covering Trust Bonds more than four and a half times to £15,465,834 (or £3,483,295).

The united concerns have reached full and economic production and the sales of the output cover 10 years at cost including charges of all kinds, plus a fixed profit per ton, sufficient to provide the company with an annual net profit of approximately $1,450,000 from its manufacture of pulp alone, irrespective of revenue from the electric power, light, telephone, railway and post undertakings. The sum required for interest and redemption of the bonds is $864,000 the first year, decreasing progressively by $44,800 each year.

The Trustees, the Crown Trust Company, deduct $10 per ton on mechanical and $15 on sulphite pulp as shipped by the Saguenay Pulp and Power Coy, through Messrs. Becker, thus providing over £300,000 a year for bound interest, redemption, and for other purposes as provided in the Trust Deed, and a large sum is already in their hands against shipments effected this season.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties Chemistry and Testing of Raw Materials and Finished Product

A-1 Paper Making Qualities of Some Indo-Chinese Woods. Papier xxv, 463-464 (Oct. 1922). According to Hein and O. Roerich **gao** gives 30% of light brownish red, easy bleaching pulp, which is homogeneous and contains very few non-fibrous elements. The average fiber length is 2 mm., tensile, tearing and crumpling strengths are satisfactory. The pulp is quite suitable for the manufacture of ordinary grades of paper. **Seu** gives 34% of a light yellow unbleached pulp, which is homogeneous and contains but few non-cellulosic cells and vessels. Average fiber length 1.7 mm. The tensile, tearing and crumpling strengths are exceptionally high. The pulp is suitable for the manufacture of ordinary grades of paper. **Vai** gives 40% of light brown, slightly rose-colored, unbleached pulp, which is homogeneous and contains very few non-fibrous elements. The tensile, tearing, and crumpling strengths are rather poor. It could be used in admixture with other pulps. **Vang-chung** gives 34% of a light brownish-yellow, easy bleaching pulp which has satisfactory tensile, tearing and crumpling strengths. It can be used either alone for the manufacture of common grades of paper or in admixture with other pulps.-A.P.-C.

A-1 The Chemistry of Wood. V. Results of Analysis of Some American Woods. G. J. RITTER and L. C. FLECK, Forest Products Lab., Madison, Wis. **J. Ind. Eng. Chem.** xiv, 1050-1055 (Nov. 1922). Complete analyses are given of the woods of western yellow pine **(Pinus ponderosa)**, yellow cedar **(Chamaecyparis nootkatensis)**, incense cedar **(Librocedrus decurrens)**, tanbark oak **(Quercus densiflora)**, redwood (heartwood) **(Sequoia sempervirens)**, mesquite **(Prosopis juliflora)**, balsa **(Ochroma lagopus)**, and shellbark hickory **(Hicoria ovata)**; and results previously obtained at the Forest Products Lab. are retabulated along with the the new data for purposes of comparison. In the discussion of results the authors show that the alpha-cellulose isolated from the various woods are not the same chemically, as is claimed by some investigators. Comparing the methoxy and lignin contents of redwood and live oak, it appears that the composition of lignin in the two species is uniform from the standpoint of the methoxy content. If this uniformity holds in all woods, then the methoxy not associated with the lignin must vary. It is suggested that this may explain the difference in yields of methanol from hardwoods and softwoods on destructive distillation.-A.P.-C.

A-1 Distribution of Methoxy in the Products of Wood Distillation. L. F. HAWLEY and S. S. AIYAR, Forest Products Lab., Madison Wis. **J. Ind. Eng. Chem.** xiv, 1055-1057 (Nov. 1922). Methoxy groups in wood are the source of the methanol obtained by destructive distillation, but only 16 to 30% of the methoxy goes to form methanol. The article describes the search for the other 84 to 70% methoxy in the crude products of distillation of maple, oak, and incense cedar. The changes in the distribution of the methoxy when the wood is treated with sodium carbonate or phosphoric acid before distillation are also described.-A.P.-C.

A-2 H-5 The Decolorizing and Bleaching of Rags. E. BOURDILLIAT. **Papeterie** xliv 434-441, 482-489, 530-537, 578-585, 626-630, 674-678, 722-726, 770-778, 818-829, (May 25, June 10, 25, Aug. 10, 25, Sept. 10, 25, 1922). A complete treatise on the subject, being a reprint of a book published about 10 years ago and now out of print.-A.P.-C.

A-3 Hydrophyte Cellulose. Svensk Pappers Tidning xxiv, 459-460 (1921); **Chem Abs.** xvi, 4058 (Nov. 20, 1922). The preparation of paper pulp from such hydrophytes as reed, etc., is recommended. Illustrations are given showing the character of the fibers.-A.P.-C.

A-3 Andropogons as Paper Making Materials. CH. GROUD. **Papier** xxv, 446-449 (Oct. 1922. Results are given of tests carried out at the French School of Paper Making at Grenoble. **Imperata arundinaceae** from Indo-China, containing 14% of moisture when air-dry, was charged into a spherical digester in 4 to 5 cm. lengths, slightly washed, steamed for one hour low pressure, and cooked for seven hours with 13% of caustic soda as a 5° Bé. liquor, under 3 to 3.5 atmospheres. The grass contained 42% of cellulose, and the yield of bleached pulp, using 16% of bleaching powder, was 31%. The paper was of a fine white color, thickness 0.11 mm., weight 80 g. per square meter; breaking length, machine direction 3,166 m., cross direction 2,000 m., average 2,583 m.; bursting strength 1.130 kilos. The cellulose is fine and fibrous, fiber length 1 to 3.5 mm. average 1.8 mm., average diameter 0.01 mm., felting power 1/180. The fibers are regular, cylindrical, with sharp and elongated end. The lumen is small and the walls are fairly thick. There are a few longer and stronger fibers (3 mm. long and 0.012 to 0.015 mm. diameter) and various cells similar to, but smaller than, these found in straw pulp, which are largely eliminated in the washing. The pulp is suitable for the manufacture of fine papers (printing ledger) either alone, or preferably mixed with wood rag or bamboo pulps. Leaves (containing a few fragments of stems) of **Andropogon muricatus** were lightly crushed between rolls, put through a straw-cutter, and cooked: (1) with 7% of caustic soda as 4° Bé. liquor under 3 atmospheres, for 4.5 hours, which gave a decidedly greenish material; (2) with a 3° Bé. sulphite liquor, for 4.5 hours, under 3 atmospheres, which gave a light yellow product. The digested material was defibered and bleached with bleaching powder. Yeild 35%. The paper obtained was of fairly good quality, white, opaque, but not very strong. The fibers are 1.5 to 2mm. long, and 0.010 to 0.015 mm. in diameter, felting power 1/150. The fibers are regular, cylindrical, elongated with fairly thick walls, and lumen about one-third the diameter of the fiber. There are numerous and varied non-fibrous elements, which are largely eliminated in washing; but the finished pulp still contains about 20%, which accounts for the low strength.-A.P.-C.

A-3 Nature, Treatment and Qualities of Straw Pulp. E. ARNOULD. **Papier** xxv, 433-436 (Oct. 1922). Brief general review of the subject.-A.P.-C.

A-3 K-4 Pulp from Reed (Arundo Phragmites). H. and C. BRANCO. Can patent 224, 357, Oct. 3, 1922. The reeds are treated with malt and then fermented, and alcohol and other by-products are recovered. The residue is disintegrated for the production of mechanical pulp or treated with weak caustic soda below 100°C. for the production of chemical pulp.-A.P.-C.

A-4 E-1 Testing the Degree of Digestion of Wood Pulp. H. ROSCHIER. **Pappers och Travarutisskrift; J. Soc. Chem. Ind.** xli, 746A (Oct. 16, 1922). The rate of reduction or permanganate under standard conditions is proposed as a rapid approximate measure of the degree of digestion of wood pulp and is particularly applicable for mill control. A one-hundredth normal solution of potassium permanganate is most suitable; it must be kept neutral and acidified just before use. Two g. of finely rasped wood pulp, or 6 g. of moist pulp squeeze out in the hand, is weighed and rolled into a loose ball. 80 cc. of permanganate solution is placed in a 300 to 400 cc. glass stoppered bottle, 1.6 cc. of normal sulphuric acid added, the ball of pulp is dropped in, the stopper is inserted and a stop-watch is started. The bottle is shaken slowly and uniformly by hand and the liquid is kept under observation by slightly tilting the bottle. Immediately the red color of the permanganate is discharged, the time in seconds is noted. A standard temperature of 20°C. is maintained, as the rate of discharge is greatly influenced by differences in temperature. The following grades have been established: easy bleaching pulp 70 secs.; slowly bleaching 50 to 70; medium strong 35 to 50; ordinary strong 25 to 35; very strong and hard 25. The values have been co-ordinated with the chlorine absorption values determined by Sieber's method.-A.P.-C.

A-13 The Theory of Color. Leather Trades' Rev.; Pulp and Paper xx, 973-975 (Nov. 9, 1922). A brief popular discussion of the theory of color, showing more particularly the difference between pigment colors and colored light rays and the blending of primary colors (both pigment and light rays) to make all known colors. -A.P.-C.

A-14 Qualities and Properties of the Chief Grades of Paper. E. ARNOULD. **Papier** xxv, 385-389 (Sept. 1922). An enumeration of the qualities and properties (sizing, coloring, weight, formation, degree and nature of beating, composition, etc.) required of papers for different uses (copper engraving, halftone engraving, lithography, photo mounts, featherweight, ordinary print, bristol, atlas, etc., etc.), together with a few practical hints on the duplication of a given sample. -A.P.-C.

A-14 Report on Folding Tester. HELEN U. KIELY, American Writing Paper Co. **Paper Ind. iv**, 1129. 1131 (Nov. 1922). The author discussed the results obtained from collaborators working on twelve machines (results of the tests not given) and concludes that it seems that if the strips are carefully cut and humidity carefully controlled the folding machine has a distinct value and results from one laboratory should agree very closely with those from one another. It cannot be concluded that there is any difference between the old folding machines and the new machines now being put out in the United States. It is recommended that the work be continued.-A.P.-C.

A-14 Determining the Tensile Strength of Paper. RAYMOND FOURNIER. **Papier** xxv, 437-440 (Oct. 1922). The authors, after briefly discussing the shortcomings of the instrument generally used for measuring the tensile strength of paper (Schopper), advises using a machine which could take much wider test strips, e. g., 15 cm. instead of 15 mm. This would necessitate the use of forces up to about 300 kilos, and Schopper type instruments of this capacity would be much too heavy, cumbersome, and expensive. The author therefore briefly sketches (diagramatically) a simple and efficient hydraulic type of instrument which he considers suitable, in which the tension is exerted by means of a piston which is displaced by screwing a rod into the cylinder carrying the piston.-A.P.-C.

A-15Saccharification of Cellulose. P. BUDNIKOW and P. W. SOLOTAREW. **Ber Polyt. Iwanowo-Wosniessensk** iv, 119-128 (1921); **J. Soc. Chem. Ind.** xli, 745A (Oct. 16, 1922). In the fermentation of glucose obtained by the action of acid on cellulose it is advantageous not to neutralise completely the excess of acid before addition of the yeast. By this method 85% of the theoritical amount of alcohol was obtained from paper, but a smaller yield was obtained when caustic soda instead of calcium carbonate was used for neutralizing. The sulphuric acid can be recovered electrolytically with a consumption of about 7,215 kilowatts per kilo of acid recovered. With carbon electrodes there is a slight loss of acid and of glucose.-A.P.-C.

B. — Forestry

B-5 Logging Cableway Engine. G. FRINK. Can. patent 223,718, Sept. 19, 1922.-A.P.-C.

B-9 Forestry in Connecticut. T. S. WOOLSEY JR. **Am. For.** xxviii, 218, (April 1922).-C.L.

C. — Wood Preparing and Equipment

C-7,-7; E-5; G-6. Strong, Quick Cook, Hemlock Sulphite. L. E. SMITH Nekoosa-Edwards Paper Co. **Paper Ind.** iv, 1086-1087 (Nov. 1922); **Paper Trade J.** lxxv, No. 19, 53-54 (Nov. 9, 1922); **Paper Mill** xlv, No. 44, 1, 4, 6, (Nov. 11, 1922); **Paper** xxxl, No. 5, 7-9 (Nov. 22, 1922). A description of the precautions which must be taken in order to obtain good results, covering cleaning and barking, chipping cooking, and screening. Figures obtained on chipping tests are given, which show that with proper conditions a proper chip can be made in the chipper without the use of rechipper, crusher, or screen.-A.P.-C.

C-0; D-0; E-0; G-0; K-0; Waste in the Pulp and Paper Industry. B. T. McBAIN, Nekoosa-Edwards Paper Co. **Paper Ind.** iv, 1085-1086 (Nov. 1922); **Paper Trade J.** lxxv, No. 19, 51-52 (Nov. 9, 1922); **Paper Mill** xlv, No. 44, 10, 12 (Nov. 11, 1922); **Paper** xxxi, No. 4, 7-9 (Nov. 15, 1922). Brief sketch of the wastes which occur in the wood yard, wood room, groundwood, sulphite and paper mills.-A.P.-C.

E. — Acid Processes of Pulp Manufacture and Equipment

E-4 Seasonal Influences on Sulphite Manufacturing. WALTER S. HALEY. **Paper Mill** xlv, No. 40, 14. 16, (Oct. 14, 1922); **Pulp and Paper** xx, 925-927 (Oct. 26, 1922); **Paper Ind.** lv, 1062-1064 (Nov. 1922). The author discusses the troubles which may occur in a sulphite mill due to warm weather. These practically resolve themselves into excessive temperature of the acid. If the temperature of the acid in the storage and reclaiming tanks can be kept below 90° F. no trouble need be experienced with either milk of lime or tower systems. This can easily be obtained by having ample cooling capacity for both burner gases and digester relief. To obtain uniform strength of cooking acid the steaming of the digesters should be properly spaced. -A.P.-C.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-2 F-4 Disposal of Caustic Sludge. Pulp and Paper xx, 883 (Oct. 12, 1922). The Christie Vibratory Process is based on the fact that sludge from the causticizing of

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PULP AND PAPER NEWS

Rupert Huntley, aged 17, son of Albert Huntley, of the Hodge-Sherriff Paper Company, Melinda Street, Toronto, won the gold medal at the high school of commerce in Toronto for the general business course. This makes the second prize-winning feat for the young man, last year's gold medal which he won also, being for accountancy.

The Canadian Pad and Paper Company, Limited, 520 King Street West, Toronto, have had an enviable growth. In July, 1918 they commenced business in a small flat on Wellington Street. Three years later they moved to their present location and this year have brought their floor space to four times that of the original plant. They have concentrated on new lines and attribute their success to this. The additional flat taken over in the Gurney Foundry Building brings their total floor space to 16,000 square feet. They have also added to their equipment a Seybold 48″ automatic power cutting machine, a 30″ paper folding machine and a Frohn Simplex automatic feeder ruling machine. These machines and others which they have on hand are all running at full capacity. At their present rate of capacity the company will turn out over 4,000,000 school exercise books and 1,000,000 writing pads this year, besides a good many tons of examination and foolscap paper for schools and universities.

The superiority of Sault Ste. Marie as a shipping point is well demonstrated by the fact that the Spanish River Pulp and Paper Mills are able to ship news print by water to Chicago, Milwaukee, Detroit, Toledo or Cleveland so that the paper is laid down within one week after the commencement of loading at any of the company's three plants at the Sault, Sturgeon Falls or Espanola. Rail shipments have hitherto been the rule of the Spanish River Mills. Water transportation will be used more extensively in the future because of the lower costs and less danger of accident. The Spanish River Mills now have fourteen machines in operation, five at the Sault, six at Espanola and three at Sturgeon Falls, Ont. The company has just completed the building of an electric generating plant at Sturgeon Falls.

W. H. Sherriff, of the Hodge-Sherriff Paper Company, Toronto, accompanied by his family, sailed on Dec. 12 via the Montcalm for England, where Mr. Sherriff will visit the company's European agents. The Hodge-Sherriff Company are the selling agents for Wayagamack kraft products.

''Kraft as a Printing Paper'' is the title of an article by W H. Sherriff, of the Hodge-Sherriff Paper Company, Toronto, in a recent special edition of ''Marketing''. Mr. Sherriff points out that ten years ago most printers would have ridiculed the suggestion that kraft paper could be used for art printing. Few printers knew what the word kraft meant and those who did classed it as a wrapping paper pure and simple and one not to be placed on the same high pedestal as the art papers then in use for various attractive printing jobs. But times and manners change, as the writer points out, and since 1912 kraft paper has become known the world over as a paper that can be adapted to many and varied uses. It is pointed out that the strides made by this paper in connection with printing are nothing short of marvelous, and in fact it is no exaggeration to say that in the short space of nine years kraft has developed into a veritable art paper. Special attention is paid to kraft required for special purposes such as envelopes, cover papers, calenders, booklets and other work which requires exceptional care where the question of high class printing is involved. Large quantities of the paper have been exported to Overseas Dominions for letter press printing and in one case, it is pointed out, an important shipment was used by one of Governments overseas for census forms.

Testifying in Toronto in his action for alleged libel against the Evening Telegram, E. W. Backus explained in the witness box why he had not carride out certain conditions as to the erection and operation of a pulp mill at Kenora, contained in the 1914 agreement whereby he had acquired the Lake of the Woods timber limit. He explained that certain members of the International Joint Commission had requested him to refrain from going ahead with the development of the Norman dam owing to the possible effect on the level of the Lake of the Woods. The financial Stringency in the States and the recommendation of the commission to the effect that in order to maintain the level of the lake 47,000 cubic feet a minute must flow through the Norman dam, were cited as factors in his decision not to go ahead with his project, while he also pointed out that the Ontario Government was not urging him to proceed with it. A good deal of Mr. Backus' evidence revolved around the increased cost of manufacturing paper at Kenora owing to the price of coal and to freight rates, as compared with conditions at the head of the lake. A reduction in the price per cord of wood at the English River limits would be necessary, he said, to counterballance this added cost of manufacture.

The Strathcona Paper Company, of Strathcona, Ont. manufacturers of box board, building board and wrapping papers report that business in the board line is somewhat seasonably quiet largely owing to the stocktaking period which is now being entered upon. The company is running their small machine and they believe that the outlook for building for 1923 is very good and that prices have about reached a stable level from which no change is anticipated for some time to come. In a statement just issued the company say that they are not figuring on doing and extending until spring except in the way of getting the beater room and boiler room in shape in order that they may run both machines to capacity.

The many Toronto friends of C. H. McFarlane, of McFarlane, Sons and Hodgins, paper dealers, Montreal, are pleased to learn that he is around again after suffering for some time from the effects of an automobile accident.

The Ontario paper trade were interested in the announcement a few days ago that John Vanier, of the Abitibi Power and Paper Company, had been re-elected Mayor of Iroquois Falls by acclamation.

S. J. Moore of Toronto, President of the F. N. Burt Company, manufacturers of paper boxes, etc., and of the Pacific-Burt Company, has been elected Vice-President of the Toronto City Dairy Company.

The Levis, rag and paper stock dealers, whose premises on the Don Esplanade were recently destroyed by fire, have secured temporary premises in the old G. T. R. freight sheds on Cherry Street. The wrecking of the burned premises is now in progress preparatory to the construction on the same site of a modern warehouse of larger accommodation than the old one, which the company expect to have in use by next Spring.

The Canada Paper Board Company closed down their plant at Frankfort last week for repairs. The company are putting in new screens, pumps etc. and are making other changes and repairs in the plant.

The United Paper Mills, Spadina Avenue, Toronto, through their service department, are sending out to their patrons handsome steel cabinets containing samples of the stock handled by the firm. The cabinets are 18 x 12 x 18 inches and are sectionalized so that printers, retail paper dealers and other consumers may see at a glance the numerous lines which the company carries in envelopes, cover papers, writings, ledgers, card boards, bristols blottings, mail order pads etc. All samples are given a number and are contained in small cartons in their different weights, sizes, tints etc., in the different departments of the receptacle. Samples can be detached and handed to a customer and replacements are promptly made by the United Paper Mills. Samples of printing, engraving, art work, etc. are presented on the cover papers and the entire cabinet constitutes a very convenient and attractive piece of office furniture.

Mr. Nicholls has recently been added to the Ontario travelling staff of the Canadian Nashua Paper Company, manufacturers of waxed and gummed papers, Peterboro, Ont.

The many friends in the Canadian paper trade of Harry Woods, general manager of Warwick Brothers & Rutter, manufacturing stationers, Toronto, will sympathize with him in the death of his wife which occurred a few days ago in Toronto following an operation.

The announcement was made in Toronto last week that Ben Logie, who has been connected with the E. B. Eddy Company for nineteen years and latterly as manager of the Toronto branch, had resigned his position with the company. Mr. Logie, who is extremely popular in the Ontario paper trade, will relinquish his duties with the company at the end of December and will be succeeded by Arthur H. Pafford, formerly of Armstrong & Pafford, wholesale grocers, Toronto. Mr. Logie's popularity with the Toronto staff of the company was indicated last week when he was waited upon by the employees in the office and warehouse and presented with a beautiful gold ring.

L. C. Walker, formerly with the Whalen Pulp and Paper Company, and now representing the Forest Products Market Extension Bureau of British Columbia, has arrived in Toronto and will devote some time in a survey of the car shops in Ontario and Quebec with a view to ascertaining their requirements in the line of B. C. fir and hemlock.

T. J. Allan, Vice-President of Paper Sales, Limited, King Street, Toronto, is receiving the welcome handshakes of his many friends consequent upon his return to the office after a six-weeks illness.

De Forest Coutts of the Whitney Paper Company, manufacturers of high-grade paper and stationery, Holyoke, Mass., was a caller on the paper trade in Toronto last week.

J. F. Patton, of the J. F. Patton Co., Inc. pulp and paper exporters New York, was a business visitor in Toronto last week.

Mr. Justice Middleton, at Osgoode Hall, Toronto, last week gave judgment in the action of Price Brothers vs Stauntons, Limited, wall paper manufacturers, Toronto. The claims was to recover $33,724.04, the price of 700 tons of roll hanging paper, required to print hanging paper, sold by the plaintiff to defendants. Judgment was given for the plaintiff for the amount Claimed, with interest and costs. The counter claim was dismissed with costs.

Absolute denials were given at the head office in Toronto of the Spanish River Pulp and Paper Mills to the rumor that gained currency last week in regard to a merger that it was said was on the tapis between the Abitibi Power and Paper Co. and the Spanish River mills. It is pointed out that for several years there has been a common sales organization but those who know the individuals in charge, F. H. Anson for Abitibi, and Geo. H. Mead, for Spanish River, would not likely believe they would consent to a merger in which either one would be forced to subordinate his personal interest. Both companies are producing now to the limits of their capacity.

At the annual meeting of the Montreal Lumber Association, a resolution was passed expressing great regret at the death of Mr. Alex. MacLaurin of the St. Maurice Paper Company, Limited, an ex-president of the association.

During the past season 139,725 cords of pulpwood, equalling 279,450 tons, were shipped through the Lachine Canal. The comparison is with 108,950 cords or 217,900 tons in 1921.

On December 13 Mr. A. E. Cadman, assistant secretary of the Canadian Pulp and Paper Association, addressed the Montreal Electrical Luncheon. He spoke on the Manufacture of Newsprint, his address being illustrated by 25 slides, showing the entire operations —from forest to paper. Mr. Cadman referred to the expansion of the industry, the output having in ten years. The production of Canadian Mills was only second to that of the U. S. A. This year the mills will use about 1,600,000 cords of wood, equal to 500 square miles of forest. Mr. Cadman then briefly described woods operations, and process of manufacture at the mills, including that of groundwood and sulphite pulp.

MICROSCOPE IN PAPER MILL

In a paper on this subject read before the Microscopical Society, Mr. James Strachan, F.Inst.P., F.R.M.S., said:

"All paper contains a small percentage of grit or sand. This is a subject that has not received the attention due to it, and it is one that can only be dealt with properly by the microscopist. The sources of this grit are numerous and can only be traced up with the aid of a mineralogical microscope. A large proportion of grit in printing-papers may be traced to the china-clay used in loading, and when excessive causes undue wear and tear of process-blocks. I have found a small percentage of grit in a foreign paper specially made for wiping the front lens of oil immersion objectives. I do not advise the use of paper of any kind for cleaning photographic or other lenses.

Did you ever notice how books track you down and hunt you out? It's one of the uncanniest things I know to watch a real book on its career. It follows you and follows you and drives you into a corner and makes you read it—words can't describe the cunning of some books. You'll think you've shaken them off your trail and then one day some innocent looking customer will pop in and begin to talk and you'll know he's the unconscious book-agent of destiny. There's only one way to lay the ghost of a book and that's to read it.

soda ash, after dehydrating as far as possible by means of vacuum filters (to a moisture-content of 45 to 50%), is converted into a viscous fluid by subjeting it to vibratory influence without in any way increasing the water content. In this form it can be readily fed to a cylindrical rotary dryer from which it comes out as a dry evenly powdered carbonate of lime and is quite suitable for use as a fertilizer.-A.P.-C.

F-0 The Manufacture of Straw Pulp by Means of Chlorine. RAYMOND FOURNIER. **Papier** xxv, 173-177 (April 1922). A general discussion of this process, with a comparison of the Cataldi and of the DeVains processes. (See POMILIO this journal xx, 375, May 4 1922; DE PERDIGUIER xx, 635, July 27, 1922).-A.P.-C.

G. — Pulp Treatment and Drying — Operation and Equipment

G-5 Pulp Thickener. B. C. ROOT. Can. Patent 224,010, Sept. 26, 1922. A series of ordinary deckers are arranged axially parallel in groups having group driving means and group pulp supply and discharge means. They are arranged so that one inlet feeds two adjacent vats and also there is one discharge outlet for two adjacent vats.-A.P.-C.

G-6 Sliver Screen, B. C. ROOT Can. patent 224,009 Sept. 26, 1922. A rotating screen is provided in the center with an inclined sliver trough, and on its inner circumference with longitudinal trough-shaped transporting plates or flanges, which are preferably arranged so that the concave side is up on the ascending side of the drum. The slivers are caught in these flanges and sprays are provided to wash them into the central sliver trough which discharges them through a trunnion, the unscreened stock being fed through the other trunnion.-A.P.-C.

K. — Paper Manufacturing and Equipment

K-12 Putting a New Wire on the Fourdrinier. HARRY WILLIAMSON, Northwest Paper Co. **Paper Ind.** iv, 915-917 (Oct. 1922). Description of the proper method of changing wires on a modern fast news machine.-A.P.-C.

K-12 Felt Washer. J. PEACOCK, E. McLELLAN, and F. F. DORITY. Can. patent 223,931, Sept. 19, 1922. The device employs washing, steaming and suction, and the metallic parts which come in contact with the felt are of non-ferrous metal.-A.P.-C.

K-12 Method of and apparatus for Drying Paper In the Web. O. MINTON. Can. patent 223,759, Sept. 19, 1922. The paper is passed into a chamber where a vacuum of about 28 inches of mercury is maintained. The liquid seal is of any suitable material(preferably mercury) which has no affinity for nor deleterious effect on the web. Guide rolls are provided which almost completely fill the sealing chambers so that only comparatively little sealing medium need be used. Some of the guide rolls may be heated to act as dryers also. The web is preferably led in between two felts, but may be passed through without any felts. "Steam doctors" (See next abstract) are provided to thread the web through the dryers when starting up or when there is a break. It is claimed that drying of the paper is about eight times as rapid as with ordinary drying at atmospheric pressure, with resulting economies in cost of machine, floor space, piping, felts, and particularly in power and maintenance charges; the steam consumption is reduced about 50% (from 10,600 to 5,200 lb. per ton of paper); that the strength of the paper is increased, or else can be maintained with cheaper furnish (e. g., more groundwood in news print); and that better working conditions prevail in the machine room.-A.P.-C.

K-12 Steam Doctor for Stripping and Feeding Paper in Vacuum Dryers. O. MINTON. Can. patent 223,760, Sept. 19, 1922. The doctor lies very close to but not in contact with the dryer. Steam is led into the doctor and out through a duct ending in a port near the very end of the toe. The steam escapes in a jet which strips the web or felt from the cylinder, and at the same time forms a thin cushion between the toe and the dryer. Other passages and ports are provided in the doctor so as to form auxiliary jets keeping the web from coming in contact with the doctor and at the same time directing it towards the next dryer. The doctor may extend wholly or partly across the surface of the dryer. It can be used to strip the web off a felt as well as off a dryer. Steam under a pressure of 5.3 lb. gauge is used in vacuum drying and hot compressed air in drying at atmospheric pressure.-A.P.-C.

K-12 Treatment of paper in a vacuum. O. MINTON. Can. 223,761, Sept. 19, 1922. The paper web is fed into and out of a vacuum chamber without breaking the vacuum, and while in the chamber is dried, coated, colored, sized, or impregnated. This treatment results in better and more uniform coloring and eliminates blisters and blowholes which are particularly objectionable in impregnated papers.-A.P.-C.

K-12 Sution Box for Paper Machines. M. WENZEL. Ger. patent 354,738. Two adjacent rolls are brought close together, but not touching, so that a suction box is formed by the wire, the two rolls and lateral parts added to close up the ends.-I.G.

K-12 Rubber Rolls for Paper Machines. S. FUELSACK. Ger. patent 357,339. The rolls consist of a number of individual rubber rings carried by metallic rings. The rubber part consists of an upper layer of soft rubber and a lower layer of hard rubber which is fastened to a such a manner that lateral movement of the rubber is prevented. The hard rubber prevents injury to the soft rubber due to contact with the metallic part.-I.G.

K-12 Method of Felting Fibers on the Paper Machine. H. ANDERS. Ger. patent 353,253. The process is for the manufacture of paper which has the same tearing resistance in both directions. The stuff is fed to the wire from the top, so that the entire mass of stuff, or the greater part is fed to the wire crosswise and by means of devices which move back and forth over the wire the fibers are distributed so that they do not all lie in the same direction.-I.G.

K-12. Paper Machine Head Box. W. PAULY & CO. Ger. patent 357,639. The wire is carried through the head box over two rolls, one of which is completely immersed in the pulp in the box, while the other is arranged over it. A suction box is provided to draw the fibers on to the wire as it travels through the stock.-I.G.

K-12 Electrical Paper Machine Drives. WILHELM STIEL. **Papierfabr.** xx, Fest-u.Auslandheft, 179-192 (1922). History of the development of the use of electricity in paper machine drives.-I.G.

K-12 Development of the Paper Machine during the Last Fifty Years. FRITZ HOYER. **Papierfabr.** xx, Fest-uAuslandheft, 149-167 (1922). A detailed history of the paper machine, together with a description of the various changes in the construction of the different parts and their importance in the making of paper.-I.G.

K-12 The Drying of Paper. F. STRAUCH. **Papierfabr.** xx, Fest-u.Auslandheft, 55-66 (1922). A mathematical discussion of the efficiency of different parts of the paper machine, showing the effect of various factors on the consumption of steam. The practical application of this mathematical study is also discussed. -I.G.

K-14 Construction of Calenders. ERNST BLAU. **Papierfabr.** xx, Fest-u.Auslandheft, 168-178 (1922). A description of the different kinds of calender, details of construction, and the lines along which their future development and design are progressing.-I.G.

K-15 Steam Utilization in a Modern News Print Mill. S. W. SLATER and J. E. A. WARNER, St. Maurice Paper Co. **Paper Trade J.** lxxv, No. 13, 54-59 (Sept. 28, 1922). The purpose of the article is to show the heat required in the manufacture of news print in a modern mill. The mill in which the investigation was carried out is described. Tests were made on paper machines to determine heat required for drying, driving, and ventilating. Electric drive is discussed, and it is shown that unless the cost of electricity is low its use is uneconomical. Details are given regarding the mechanism of the drying of the paper on the machine. Tables and curves relating to the rate of removal of moisture are included. -I.G.

K-19 Paper Coating Composition. W H. WRIGHT. U.S.A. patent 1,420,173, June 20, 1922. The paper is coated with a mixture of containing casein, glue, and a high proportion of sugar.-I.G.

K-23 Manufacture of Blotting Paper and Blotting Cardboard. H. ANDERS. Ger. patent 355,270. A fleece of cellulose, rag stuff, and similar suitable materials, in as thin a film as possible, is formed on the paper machine. It is dried and rolled up in rolls. About 20 to 50 webs are then pressed together to form a single web of blotting paper or blotting cardboard. -I.G.

K-23 Composition for Making Paper Transparent. S. H. PARRISH assignor to L. C. ORRELL. U.S.A. patent 1,419,750, June 13, 1922. The composition consists of fir balsam, rosin, terpentine, carbon tetrachloride.-I.G.

K-23 The Manufacture of Blotting Paper and Parchment Stock. **Papeterie** xliv, 98-101, 146-154, 393-400 (Feb. 10 and 25, May 10, 1922). Translation by A. Papineau-Couture in **Pulp and Paper** xx, 873-878 (Oct. 12, 1922). See this journal xx, 658, Aug. 3, 1922.-A.P.C.

K-21 Machine for the Manufacture of Strip Shingles and of Prepared Roofing. A. S. SPEER assignor to ROOFING PATENTS CO. Can. patent 223,888, Sept. 19, 1922.-A.P.-C.

K-23 The Manufacture of Carbon Paper Base. ERIOGERG. **Papeterie** xliv, 109-110 (Feb. 10, 1922). Translation by A. Papineau-Couture in **Pulp and Paper** xx, 904 (Oct. 19, 1922). See this journal xx, 725, Aug. 24, 1922. A.P.-C.

L. — Articles Produced from Pulp and Paper

L-4 Machine for Making Reinforced Pasteboard Boxes. C. F. WRIGHT assignor to DIAMOND MATCH CO. Can. patent 223,839, Sept. 19, 1922.-A.P.-C.

L-4 Machine for Making Reinforced Pasteboard Boxes. J. P. WRIGHT and C. A. CARLSON assignors to DIAMOND MATCH CO. Can patents 223,840, 223,841, Sept. 19, 1922.-A.P.-C.

L-4 Machine for Making Pasteboard Boxes. M. J. MILMOE assignor to W. C. RITCHIE & CO. Can. patent 223, 886, Sept. 19, 1922.-A.P.-C.

L-4 Apparatus for Making Flatware from Paper. G. P. MALLORY assignor to SANITARY PRODUCTS CORPORATION. Can patent 223,889, Sept. 19, 1922. Several layers of paper are passed through a tank containing a solution forming a plastic filler, run through a series of rolls to leave a suitable amount of solution in the paper, calendered, stamped or embossed with the design of a spoon, etc., and passed to a press which blanks out the article.-A.P.-C.

L-6 Apparatus for Making Flatware from Paper. G. P. MALLORY assignor to SANITARY PRODUCTS CORPORATION. Can. patent 223,890, Sept. 19, 1922. The invention relates to improvements in the mechanical features of the apparatus covered by U.S.A. patents 1,227,534 (Frankland) and 1,241,517 and 1,258,414 (L. D. Jacoby).-A.P.-C.

M. — General Equipment

M-4 Belting in the Pulp and Paper Industry. K. E. TERRY, S. D. Warren Co. **Paper Mill** xlv, No. 40, 10, 12, (Oct. 14, 1922). The author briefly points out the importance of proper care of belting in pulp and paper mills, and describes the system used at Cumberland Mills, Me., for keeping all belting in first class condition. It has been found most profitable to use leather belting wherever possible, using fabric or rubber only in such places as would deteriorate leather (places that are wet, exposed to fumes, dust, grit, high temperatures, etc.).-A.P.-C.

M-4 Wire Rope — How it is Made and Used. GEO. H. LUCE, Waterbury Co. **Pulp and Paper,** xx, 924 (Oct. 26, 1922). Very brief outline of the manufacture of wire rope and of its use in logging.-A.P.-C.

N. — Power Generating and Equipment

N-4 The Power System. Coal Versus Oil as Fuel. JOHN F. FERGUSON. **Paper Ind.** iv, 921-922 (Oct. 1922). A comparison of the relative cost of using coal and oil in a high class and up to date power plant for a 65 ton M.F. book mill. Under the conditions chosen for comparison it is shown that coal is the cheaper; and when all items of cost and operation are carefully weighed there is generally a margin in favor of coal. From the point of view of estimated supply and present consumption, coal is far preferable.-A.P.-C.

R. — General

R-1 Old German Paper Mills FRIEDRICH VON HOESSLE. **Papierfabr.** xx, 41-51 (1922). A description of some old German paper mills located near Neubrandenburg.-I.-G.

R-1 The Port Alice Plant of the Whalen Pulp and Paper Mills, Ltd. **Paper Ind.** iv, 929-937 (Oct. 1922). A detailed description of the plant.-A.P.-C.

R-2 The Journal Literature of Chemistry. E. J. CRANE, Ohio State Univ. **J. Ind. Eng. Chem.** xiv, 900-904 (Oct. 1922). A discussion of how to make best use of journal literature, and more particularly of the use of indexes of abstracts journals.-A.P.-C.

R-2 The Story of the E. B. Eddy Co., Hull, Canada. **Pulp and Paper,** xx, 849-855 (Oct. 5, 1922).-A.P.-C.

R-4 Serving the Customer. H. M. GRASSELT. **Paper Ind.** iv, 909-910 (Oct. 1922). A brief discussion of the importance of properly following up orders through the mill to see that customers get proper service.-A.P.-C.

R-0 Proposed standard Substance for Paper. -S. L. WILLSON. **Paper Ind.** iv, 782-787 (Sept. 1922); **Paper Trade J.** lxxv, No. 7, 49-52 (Aug. 17, 1922); **Paper Mill** lxv, No. 35, 16, 18, 20 (Sept. 9, 1922); **Paper** xxx, No. 25, 10-14 (Aug. 23, 1922). A discussion of the advantages to be gained by adopting a "substance" based on a ream 25 x 40 inches of 1,000 sheets, for all papers and boards.-A.P.-C.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, December 19. — The approval of the holiday season and the taking of inventories, usually involve a falling off in business. Consumers are not inclined to order above actual needs, and jobbers are naturally not desirous of adding to their stocks. Trade during the past week has been fairly good with a considerable amount of it of the rush character. The houses carrying lines which appeal to the holiday trade have been very busy sending out goods to fill late orders.

Representatives of mills report that the plants are running up to somewhere near capacity. They will naturally welcome more business, but on the whole there is little to complain about. The trade returns for November are quite satisfactory, especially in relation to exports, in which pulp and paper figure so prominently. The total of Canadian trade was $208,020,232 as compared with $151,911,451 in November 1921. Our exports advanced by $44,262,811, while imports were up by $11,922,816. The figures for the eight months of the fiscal year indicate an equally good condition. Exports were up by $119,552,641; whereas the imports were only $4,300,255 higher. Canada during that period had the very respectable favorable trade balance of $114,720,129. Thanks to the expanding pulp and paper exports.

There is nothing of any outstanding importance to record regarding newsprint. The imports of paper into the U. S. are increasing in order to keep pace with the greater consumption; Canada securing the entire amount of the excess tonnage as compared with the first nine months of 1921. The quantity imported from Europe was negligible, only 84,000 tons, or about 12,000 tons less than in 1921. Sweden and Germany were the only countries showing increases. Stocks in publishers' hands are decreasing. Canadian mills are full up with orders for next year, and could sell more paper if it could be produced.

Business in other paper departments is fairly good. The demand for writings, bonds, and ledgers is satisfactory; tissues and toilets are being well bought, while wrappings keep up. The call for boards has dropped off somewhat, now that the orders for the holiday trade have been filled.

In the pulp market, groundwood continues to be the feature. A large number of inquiries are to hand, and with the shortage in production owing to low water, the price is well maintained. Our exports to the U. S. show a considerable advance this year. Bleached sulphite is dull, owing to seasonal conditions.

Reports from the St. Maurice Valley and Laurentian districts state that pulpwood is being taken out in large quantities. The weather has been ideal for camp operations and it looks as if the companies will be able to carry out their full programs.

Toronto Market Notes

Toronto representatives of Eastern Canada mills, chiefly those in the Ottawa Valley, report the production of paper considerably interfered with owing to the low water that has prevailed for some weeks past and the consequent closing or partial closing down of several of the mills. It is stated that those mills which are not equipped for independent power have been rather seriously hit although it is expected that the difficulties will be shortly overcome. While the pulp and paper trade is passing through a somewhat quiet period in Ontario, consequent upon stock-taking, the paper manufacturers in the Niagara Peninsula and the paper and pulp mills in Northern Ontario are all busy and report excellent prospects for the coming year's business. Values of papers are now pretty well established and whatever changes in the price lists that may occur will be of an upward character. Features of the week in the Ontario trade were a quarter of a cent a pound rise in the price of the lower grades of wrapping paper and half a cent a pound increase in the better grades, while newsprint underwent an increase of $5 a ton all round. New contracts are now being signed up for the coming years' supply of newsprint and in many cases the entire output of the mills has been sold for 1923 at an advance in price of $5 a ton. The demand keeps up exceptionally well and although it is expected that a considerable tonnage will come onto the market in the next few weeks there is little doubt that it will be readily absorbed. The following prices now prevail f.o.b. mill, net: news rolls, car lots, $3.75, less than car lots, 4 cents: sheet news, car lots,s 4½ cents, two-ton lots or over, 4¾ cents, one ton lots or less 5 cents.

RAG AND PAPER STOCKS. — The usual December weakness has struck the paper stock market, most of the mills holding off buying until after the first of the year in order that there be no accumulation of stocks. This has a tendency to weaken the price although the higher grades remain firm. Kraft is the strongest grade in the market. There is a somewhat better demand for some of the higher grades remain firm. Kraft is the strongest grade in the market. There is a somewhat better demand for some of the higher grades of rag stock but the low grades are moving in limited quantities, the mills only buying for their immediate needs. Orders are not lacking but Toronto dealers say they are not so plentiful as they have been of late.

COATED PAPER. — A rise in coated paper is anticipated early in the year as a consequence of the high price and scarcity of casein which is almost unobtainable at the present time. The coated paper mills in Ontario report business as well sustained and the mills are all running pretty close to capacity.

BRISTOL BOARDS. — The week saw an unimportant adjustment in the price of sulphite Bristols, a reduction of ten per cent having been put into effect in order to meet prices in this line across the border. Other lines remain the same and the demand on the whole is keeping up fairly well.

TAG MANILA. — While there has been no general increase in the price of tag manila it is known that some of the mills are selling at an advance of ten per cent and it is believed that the increase will become general within a very short time. The lower grades only have so far been affected by the advance.

KRAFT. — The kraft mills are all busy and for the most part have not been affected materially by low water. Jobbers in kraft report a good steady trade despite the Christmas season. Kraft pulp is still quoted at $70 per ton f.o.b. mill and m.f. paper at $8.00 per one hundred pounds and m. g. at $8.15 per one hundred pounds, delivered.

WRAPPING PAPER. — A slight rise in wrapping papers went into effect on Dec. 17th representing quarter a cent a pound on the cheaper grades and half a cent on the better lines. Price lists are also now quoting on half ton and less than half ton lots and a new ruling in the wrapping paper trade is that quantities may now be assorted in ton or half ton lots only. The following are the new prices: Rag Brown, car lots, $5.00; ton lots, $6.00; half ton lots, $6.25, less than half ton lots, $6.75; Grey Wrap, $5.50, $6.50, $6.75, $7.25: News Counter Rolls, $5.75, $4.75, $7.00 and $7.50; B. Manila, $6.00, $7.00, $7.25, $7.75: No. 1 Manila and Fibre, $7.25, $8.50, $8.75, $9.25. There is no change in the price of kraft wrapping except that a price for half ton lots is added.

NEW YORK MARKETS

New York, December 16. — (Special Correspondence) — While it is true that in some quarters signs are not wanting that the customary slowing down of activity during the final several weeks of the year is affecting the paper market to some extent, it is also plainly apparent that the industry as a whole is in a livelier position than is usually the case at just this point in the year. It is but natural for both manufacturers and jobbers to let up in their operations insofar as regards the increasing of stocks until after inventories for the year have been compiled, but the movement of paper of most kinds keeps up at a remarkably brisk pace, and present indications are that the industry will close the year with a rush and start the new year with just as much of a rush.

Demand for paper, as a general thing, shows no recession. There has been a slowing down process in some parts of the trade, but this has been more than offset by a steady increase in the call for other grades of paper. Newsprint and book paper, wrapping and tissue, and fine paper are equally as active as at anytime recently; if anything, these kinds of paper are in bigger demand than previously, whereas there is less life to the market for box boards and for building papers. Manufacturers in quite a few cases have let up somewhat in their production, choosing to liquidate stocks on hand as much as possible before the end of the year, and jobbers in turn are buying chiefly to cover the actual wants of customers, with the result not as lively a tone exists though aggregate busisness keeps up in about former volume.

Newsprint is moving in very large tonnage. Present indications are that the heavy consumption of print paper during the past several months will carry the consumption for the year up to a point where a new high record will be established this year. Publishers are printing exceptionally large issues, and it is nothing to pick up a New York daily and turn page after page and find literally nothing but advertising, so urgent is the demand for advertising space. Not only this, publishers are still omitting many columns of advertising from nearly every issue; one of the afternoon papers yesterday leaving out no less than 20 columns of advertising, according to its own announcement.

If the prevailing advertising wave continues into the new year, and there is every sign that it will, manufacturers seem assured of a ready market for all the newsprint they are able to produce during the coming twelve months. Reports say that publishers who have been arranging contracts for next year's paper supplies have in almost every case greatly increased their tonnage, and everything points to the forthcoming year being a wonderfully prosperous period for print paper mills.

There has been a splendid business in the retail market in fine papers during the present pre-holiday season. Demand for boxed stationery has been very good, it is said, and jobbers' and retailers' stocks have been well liquidated, which should insure much business for fine paper manufacturers after the turn of the year as these stocks must be replenished. Fine papers display a firm price tone. The tendency of quotations is upward, as would be expected with the movement into consuming channels active and with raw materials hopping in cost. Rag papers especially are strong in price, reflecting the high prices prevailing on cotton cuttings of various grades.

The book paper market is active. Consumers, and more especially the large consumers, are constantly calling on mills for larger supplies of book paper, machine finished in particular, and it is stated that mills making book paper are busier today than they have been in a couple of years. Quotations are firm at around 7 cents a pound f.o.b. New York for machine finished, 7.25 to 7.50 cents for super book and an average of 10 cents a pound for coated book.

Wrappings are in active demand, many late season orders having been received, and prices are fully maintained. In some cases producers are reported asking 8 cents a pound for No. 1 kraft wrapping for spot delivery, though a more representative market price is around 7.25 cents New York. Tissues are moving in good volume and at steady prices.

There is a fair routine demand for box boards, but activity in this branch of the market is not what it was a short time ago. This is the slack in-between season for boards and consumers are buying only to fill immediate requirements, so that demand is rather spotty. Nevertheless most mills are securing enough business to keep them well engaged, and news board holds in price at around $55 a ton New York and plain chip at about $52.50 per ton.

GROUND WOOD. — Mechanical pulp is moving in a steady way against contracts and the market is characterized by fair activity although current demand does not begin to approximate that of a few weeks ago. Indications are that most consumers are ekeing out their stocks in such a way as to keep them out of the market as buyers until after the turn of the year, and while now and then the sale of a fair-sized tonnage of ground wood is reported, fresh demand generally has slumped from what it was not long ago. Producers are maintaining quotations on an even keel. Domestic grinders quote around $40 a ton at producing plants for prime spruce ground wood for prompt shipment and are said to be securing this figure without difficulty from spot buyers. Importers continue to ask between $40 and $41 a ton ex dock and assert that they are realizing but scant profit in sales at these rates owing to the stiff prices demanded by manufacturers on the other side of the Atlantic.

CHEMICAL PULP. — There is just enough easiness in prices of chemical wood pulp to prevent the market from being firm. Generally speaking, quotations are maintained; that is, producers and importers are not pressing matters by offering pulp at sharp cuts in price, and yet here and there some lots of sulphite and kraft pulp are available at prices representing slight declines from recently ruling market levels, with the result the tone is rather unsteady. Scandinavian kraft pulp, for example, has been reported offered down to 2.75 cents a pound on the dock, and foreign unbleached sulphite of No. 1 grade is said to be available at about this same figure or a trifle lower. Bleached sulphite is holding its own in price fairly well, at least strictly No. 1 bleached is quoted at about former levels, though some of the poorer qualities are offered at concessions. As an example of this condition, an importer reports a sale of No. 1 bleached sulphite at 5 cents per pound ex dock New York, while admitting that he is offering some grades of bleached sulphite down to 4.25 cents. There is not a whole lot of current demand for pulp. Paper manufacturers are buying cautiously during the last several weeks of the year and mainly to cover direct wants. At the same time the bulk of supply coming into view is reported finding an outlet among consumers.

RAGS. — The feature of the papermaking rag market this week has been a firming of prices of roofing stock. Evidently certain felt paper mills have come into the market to buy and the increased demand has had the effect of sending prices up slightly. No great change has taken place but even an advance of a couple of dollars a ton, such has taken place, is somewhat of a surprise at just this point of the year. Dealers in New York report sales of No. 1 roofing rags at 1.05 and 1.10 cents per pound f.o.b. this city, and of No. 2 packing at 95 cents and $1 a hundred pounds.

New cuttings of all grades hold firm in price despite some slowing down of demand. Dealers place much emphasis on the small supplies of cuttings coming forward from clothing establishments and also on the stiff prices demanded by cutters, and are in turn passing on the high prices to paper mills. Sales of bleached shoe cuttings to mills at 9.25 cents a pound New York, of No. 1 white shirt cuttings at 11.75 cents, of No. 1 washables at 4.75 cents, of pink corset cuttings at 8.50 cents, and of blue overall cuttings at 6.75 cents have been reported. Old whites and blues are comparatively steady though buyers are picking up some lots at price concessions.

PAPER STOCK. — There has been a distinct recovery in prices of some grades of waste paper this week. Low qualities have suddenly started to advance under a broader demand from consuming quarters, and prices have risen some $3 to $4 a ton on some grades. Old folded newspapers have sold at 1.20 cents per pound f.o.b. New York, recording a jump of fully $4 a ton, while No. 1 mixed paper is bringing 90 to 95 cents a hundred pounds New York, representing a rise of about $3 a ton. Old kraft paper is firmer with dealers here asking about 2.15 cents a pound New York for No. 1 packing, and white news cuttings have strengthened in price to around 2.20 cents per pound. No change is noted in white shavings though prices are holding steady. Dealers quote about 4.25 cents a pound for No. 1 hard white, and 3.50 cents for No. 1 soft white shavings, with the probabilities favoring buyers getting some supply at slightly less than these figures. Flat stock also is steady but unchanged, with current quotations ranging around 2.40 cents per pound New York for No. 1 heavy magazines, and 2.10 cents for mixed books.

OLD ROPE AND BAGGING. — Demand from paper mills for old rope has tapered off but quotations are maintained, dealers asking close to 6 cents per pound at shipping points for domestic manila rope and asserting that supplies are still far below normal. There is a routine movement of old bagging at prices of around 1.15 cents a pound New York on No. 1 scrap bagging, 1.25 cents on gunny bagging, and 75 cents a hundred pounds on roofing bagging.

With The Woodsmen

TIMBER CRUISING IN SOUTHERN STATES

Two forest engineering parties from the New York Office of James D. Lacey and Company have recently started important field work in the South. One party of twenty men is making an intensive forest survey of 127 square miles in Louisiana in advance of proposed manufacturing operations for which the timber estimates and type map will be the basis. Mr. S. J. Hall is spending the week of December 10 with the Louisiana party.

Another party is making a careful cruiser of a smaller tract in South Carolina in connection with the acquirement of stumpage for an existing mill operation. Several preliminary examinations have also been made recently along the Atlantic seaboard and a reconnissance of pulpwood resources in the central Gulf region was completed a short time ago.

In addition to the actual and prospective improvement in business conditions reported practically throughout the South, there is a rapidly growing recognition of the re-growth possibilities on cut-over lands and the future timber supplies of several companies are likely to be grown as crops under careful forest management.

LUMBER BILL REJECTED

By a vote of 22 to 18 the British Columbia Legislature rejected a bill to make compulsory an eight hour day in the lumber industry.

IMPORTANT SALE OF TIMBER LIMITS SOON

The largest sale of timber limits ever held in this Province at one tim eis now being arranged for January by the Department of Lands and Forests. The Government has decided to dispose of the Manicouagan River timber limits, situated on that river on the North Shore.

The area of the limits to be sold reaches 2,000 square miles and surrounds limits at present exploited by the Ontario Pulp and Paper Company. The importance of the sale is evidenced by the fact that a deposit of $150,000 will be sought from the susscessful bidder at the auction sale which will be presided over by Hon. Honore Mercier, Minister of Lands and Forests.

GRANGE ASKS EXEMPTION OF BUSH LOTS

After a debate on reforestation and the preservation of existing forests the Dominion Grange in annual meeting in Toronto last week decided to memorialize the Government to exempt all bush lots from taxation. It was pointed out by J. C. Dixon that a township at present had the power to exempt bush lots, but that this power was not exercised. Howard Bertram mentioned cases where bush land, unsuitable for agriculture, was assessed as high as cultivated land.

EASIER FINANCING FOR LUMBER TRADE

Quebec, December 11. Of great importance to pulp mill companies and lumbermen is a bill which Peter Bercovitch, of St. Louis, Montreal, has introduced in the House. It enables the companies having to do with the wood trade to finance with greater facility, so much so that a company which has timber limits may pledge the trees for advances to the bank. The bill amends the Revised Statutes, 1909, respecting the transfer of cove receipts, replacing articles 7461 to 7464 of the Revised Statutes.

The bill, it is understood, has the Government sanction. It will enable lumber companies to obtain advances on their limits, and on their cut timber before it reaches its destination at the mills, and enable thereby more rapid financing.

The trees as they stand, the logs when the are cut, the boards when they are sawn or even manufactured may be mortgaged. Hitherto, the companies could not borrow money on such wood until the wood was in the boom. The effect will be to enable the lumber man to do just what the farmer does when he borrows money on the crop he has planted or the crop that is still growing

He will have the same right to hypothecate the timber as the merchant can do with his goods, taking his cove receipt to the bank and obtaining an advance on it under section 88 of the Bank Act, and the cove receipt may also be given as collateral security to any furnisher for materials he may need.

There is one company doing business in the province, which has large timber limits, which owes the Government of this province considerable money for stump duty.

NOTES FROM BRITAIN

It is estimated that Becker & Co., Ltd. will earn commission on these contracts they have made of over £40,000 a year for ten years. Their turnover in 1921 reached £6,715,073. Through holding the capital of the Clyde and Sissiboo Pulp Mills, Becker's own 28,000 acres freehold and 46,000 acres leasehold forest lands and two pulp mills in Nova Scotia. In addition to the manufacturing interests held in Norway, the company have the remainder of their investments chiefly in debenture and share interests in British paper mills and in the allied shipping concerns.

Wood Pulp Association

The annual meeting of the Wood Pulp Association was held yesterday in London, Mr. L. P. Andrews presiding.

There was nothing startling at the meeting, its old time glory being on the wane. Even the annual dinner is not being held in these days of aconomy, flourishing pulp contracts. I will deal with the meeting next week in the British news.

Mr. J. B. White, of the Riordon Company Limited, is taking a leading part in the arrangements for the annual convention of the Canadian Lumbermen's Association on January 24 and 25.

You cannot whisk up to success by way of the escalator—you must climb the stairs, sometimes in darkness, gropingly. But you must climb.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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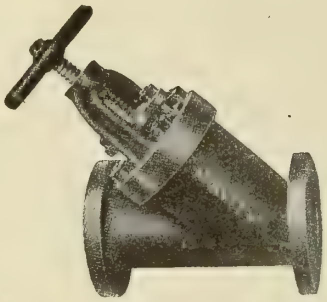

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A HAPPY NEW YEAR

THANKS

The editor wishes to express his very sincere appreciation of the many messages of good cheer from good friends everywhere. May they all live to eat milk toast!

BACK AND FORWARD

1922 is practically gone. 1923 is almost here. At the end of 1921 our pulp and paper industry looked back on a year which was filled largely with business troubles and disappointment and we looked forward to 1922 with a great deal of optimism and enthusiasm. We expected better business and better confidence and a firmer foundation for industrial relations. We were not wholly disappointed. The end of 1922 sees business in a very much better position than existed at its beginning. The prices for commodities generally are lower than for some years back but the volume of business is very materially increased. The amount of products handled is considerably in excess of the same during the previous year. The tonnage of pulp and paper exported is not only greatly in excess of the quantities exported during the same period in 1921, but is even in excess, in most cases, of the record shipments of 1920. This means more work all round for employees and executives and, even at lower wages, it means far more contentment and comfort and peace of mind due to the fact that the dollar goes considerably further than it did two years and more ago.

Taking all things into consideration, the outlook for 1923 is really bright, and, knowing that happiness is attainable, we wish all our readers

A HAPPY NEW YEAR.

THE UNIVERSITY AND THE INDUSTRY

In a recent number of the "Pulp and Paper Magazine," comment was made on the establishment of a department of research by the Pulp and Paper Association under the charge of a director who would serve principally in just that capacity, namely, directing the research done within the industry by the various technical men employed by the mills, whether they be confined to the laboratory or whether they be so-called practical men who really have the instinct for research but who, often unknown to themselves, are carrying on a valuable bit of scientific investigation by making changes here and there in the processes or equipment that they are handling every day in their routine mill work. Besides organizing, directing, and co-ordinating the research work within the industry, the director would be able to serve the industry and the country in a very important way by representing the pulp and paper manufacturers in co-operation with other institutions capable of, and interested in, the research problems that puzzle the manufacturers of these products and the persons who convert them into other articles of commerce. These institutions are the universities of our land and the Forest Products Laboratories of Canada, situated at Montreal. Prominent among the universities interested in these problems is McGill University, which has received an endowment for the establishment of a chair of Industrial Chemistry which would naturally have a distinct leaning towards the subject of Cellulose chemistry, owing to the fact that the endowment comes as a bequest of the late Mr. Ezra Butler Eddy, one of the most prominent names in the development of the pulp and paper industry in Canada.

On the subject of research, we should like to quote a few paragraphs from our contemporary, the "Canadian Mining Journal," particularly as the journal repeats a few very pointed sentences from Sir Auckland Geddes who came very near being the present principal of McGill University.

"It is a sick world that we are living in. It would be a very much sicker world if doctrinarians had their way. We confess to an impatient distaste to much that is written and spoken, by men who should know better, recommending curative measures.

"The world's malady is not mortal. Weakness and fever are the unavoidable results of the phlebotomy of war.

"It is good to hear commonsense from high quarters. Sir Auckland Geddes, British Ambassador to the United States, speaking recently at the University of Pennsylvania, referred thus to the world-wide need for research: — "As one looks round the world to-day and "sees in country after country the power, the direction "of force, passing from the hands of the people that "have long held that power, sees wealth being des-"troyed, sees all the surplus margin of wealth dis-"appear, one realizes that there is cause to take steps "to spread the appreciation of research, so that no "shift of political power can possibly take place that "will not leave that power in the hands of those who "at least understand something of the importance of "research, *which has to be supported because it can* "*never be self-supporting.*"

"The italics are our own. The sentence italicized is well worth keeping in mind. It requires supplement-ing, however, by the statement that research to-day, whether conducted by governments, universities, or manufacturing firms, although it is not directly self-supporting, yet pays for itself a hundred-fold.

"Scientific and industrial research is the corner-stone on which the edifice of Canada's prosperity must be built if it is to be architecturally sound."

When cellulose is spoken of, one naturally thinks of pulp and paper as the beneficiary of research which may be carried on in this connection. It is entirely wrong to think that the pulp and paper industry is the only branch of business that will benefit from research work in this connection. As a matter of fact several other very important industries are founded on scientific work which has been done with cellulose as one of the important factors. We refer particularly to the manufacture of explosives, or sensitized films, and of artificial silk. When one considers the enormous extent of the mining industry in Canada, which is primarily dependent upon the use of explosives, as well as of agriculture, in which industry dynamite is coming more and more to be appreciated, the value of extending our knowledge of the basic substance and the ways of improving and cheapening the manufacture of this important substance for loosening soil and shattering rock, when one considers what wonderful entertainments are now possible through the invention and application of the moving picture film, and when one has regard to the strides made in our textile industries with the introduction of artificial silk made from cellulose, there will be no question of the fundamental importance of establishing, somewhere in our Dominion a Chair or Professorship primarily entrusted with the entention of our knowledge of this fundamental substance. The opportunity for doing this is in the hands of McGill University and it is an opportunity that should be cherished and appreciated to its fullest extent. Never has there been more need for scientific work along the lines we have just briefly mentioned and nowhere is such research more important than in Canada. The present is an opportunity for McGill to establish a chair that will place the old university in a unique position among schools of learning and with a corp of enthusiastic and capable research workers attacking the fundamental problems that center about this universally important substance, the grey stone buildings under the brow of Mount Royal will be a Mecca for those who are interested in cellulose and its many industrial ramifications. The reputation of a University having such a chair would be world-wide and no one would dare to estimate the service that such research work might render to mankind.

The generous bequest which makes the establishment of the Mrs. E. B. Eddy chair possible, is to our mind but an indication of the support that our great industries would extend to the university if the Principal and the Board of Governors set themselves the task of contributing their part to Canadian industry through this channel. It will take several years, no doubt, for definite results to be accomplished but the need for fundamental information as to the character and properties of cellulose has been so often met in research work of a more practical character in our mills that it would not be very long before our industries would begin to appreciate the value of having a place in Canada where such work would be systematically carried out. We know of no place on the continent where effort is being directed primarily on fundamental problems of this character exclusively, in a purely academic way, and we certainly would be very much disappointed to see this opportunity missed for organizing a very high class, high grade research department.

We need not emphasize particularly the benefit that such work would bring to the pulp and paper industry because everyone who has attempted to do research work in a pulp and paper mill realizes its importance and will fully appreciate the service that will be rendered by the university that inaugurates such a department.

A WORTHY CONTRIBUTION

No wonder Mr. O. Schierbeck of Price Bros. & Co., was awarded the Barnjum prize of $5,000 for the best essay on the enemies of the forest! Mr. Barnjum has had it printed for free distribution to all who are interested — we have read every word in it, and urge all our readers to write for a copy to Mr. F. J. D. Barnjum, New Birks Bldg, Montreal. Parts of the essay, we hope to reproduce early in the new year.

THE NIGHT MAIL

The last collections are made—the sacks are thrown on board and out into the night, guided through the twinkling red and green lights, goes the mail.

Your mail and our mail—

Another twenty-four hours of commercial history has been filled and the messages of today are on their way.

To-morrow—letters, drafts, cheques and messages, giving and asking credit, agreements and requests for re-adjustments, letters containing offers of products and new prices, notes making appointments and notes due in thirty days—millions of them in all, to-morrow they are delivered across the desks of milions of recipients.

Then impressions are made, permanent and temporary, favourable and unfavourable.

Personalities are not present. Paper and printed characters must do the work. Many and various presentations are put to the keenest test.

Presentation—valued so vitally by the actor, the financier, the salesman and the statesman. Presentation which gives first impressions, creates atmosphere and, by repetition, makes reputations. Surely a mighty phase of commerce, this self-same presentation.

Naturally, then, one will look to paper when paper is part of any presentation. It speaks with many signs: Its crackle, its feel, its strength, its appearance, finish and colour, all talk to several senses. Presentation is a great part of its function. Also, it carries your word, your signature and your bond.—*The Crest.*

Effects of the Arrangements of the Suction Boxes on the Life of Foundrinier Wires

E. MESSMER

(Abridged translation prepared for the *Pulp and Paper Magazine* from *Le Moniteur de la Papeterie Française,* 52, 323-325, June 1, 1921, by A. Papineau-Couture.) See letter in our last issue. —Ed.

In all paper mills it is important to keep down the consumption of wires and felts as much as possible. Wastefulness is blameworthy at all times, and all the more so at the present time when high prices render economy more imperative then ever before.

As production has increased with increase in the speed of the paper machine, so has the consumption of wires and felts. It is almost superfluous to mention that the main cause of the frequent renewals of wires is the high tension to which they are subjected, other causes such as the presence of chemicals (alum, anti-chlor, etc.) in the pulp, or the cleaning of the wire with dilute sulphuric acid, care with which they are put on the machine, remaining constant.

Paper machine designers and builders have tried to cut down the tension by means of various improvemets, mostly mechanical; such as: lighter breast roll, use of ball bearings for table rolls, perforated ebonite plates as suction box covers, oscillating motion of the suction boxes, use of suction rolls, etc. But even all these improvements have not given entire satisfaction.

The time taken by a given point of the wire to pass over a suction box, which corresponds to the time during which the suction acts on the sheet to remove the water, is very short. With a 400 mm. box (about 16 inches), it is 0.48, 0.24, and 0.16 of a second, for speed of 50, 100, and 150 meters per minute, respectively; and for narrower boxes or higher speeds it is correspondingly less. It has therefore been inferred that a high vacuum was required to obtain sufficient removal of water from the sheet. But this high vacuum is recognized as having a harmful effect: it causes the wire to adhere strongly to the suction boxes, increases the tension in the wire, and causes a very great amount of friction as the wire passes over the edge of the suction boxes with a correspondingly great amount of wear.

The importance of this adherence is proved beyond question by the fact that it has been shown that 70 per cent. of the total power required to drive the wet end of the machine (wire and wet presses) is used up in overcoming the friction of the wire on the suction boxes.

It is a matter of every day observation that increasing the suction increases the friction of the wire on the suction boxes and the tension of the wire between the boxes and the wet presses. Or, in other words, the life of the wire decreases as the suction used increases. It is obvious, therefore, that to obtain a satisfactory production per wire, low suction should be used, especially as the work of the suction boxes is not proportional to the vacuum used.

Let us now examine what would happen if this were done in practice. If the suction is reduced without changing the speed, the dryness of the sheet, both before and after the couch roll, will be lowered, thereby causing the sheet to be crushed at the wet press (this may be somewhat prevented by using a suction roll); the felts will become dirty more quickly and production will be cut down; the paper will stick oftener to the presses causing breaks; not to mention other difficulties which could not be compensated by the economy of wire resulting from the use of a lower suction. In a word, there would be a very appreciable loss.

It would therefore look as though the use of a very low vacuum were not advisable; unless the above-mentioned drawbacks could be overcome by some modification in the arrangement of the suction boxes, whereby a low vacuum could be rendered at least as efficient in removing water as a high vacuum is at present. To this end, we shall look more closely into the manner in which the suction acts to see if the system at present in use gives the best results, as far as the extraction of the water from the sheet is concerned.

When the suction box is covered by the wire carrying the sheet, it is practically tight, and the pressure acting to remove the water is equal to the difference between the atmospheric pressure (equivalent to a column of mercury 76 centimeters high, or to a head of 10.33 meters of water) and the back pressure acting under the wire. In order that water may be extracted from the sheet, the back pressure must be less than the atmospheric pressure, so that the amount removed depends on the vacuum obtained by the usual apparatus, pneumatic machine, siphon, injector, pump, etc.

The vacuum may be considered as a negative pressure, which, though it differs in many respects from positive pressure, has this in common with the latter, namely, that it is impossible to obtain good results by the sudden application of a high pressure. When pressure must be applied (for example, by a hydraulic press to remove water from lapped pulp) it should be low and steady at first and gradually increased, the reasons for this being obvious.

But this most elementary principle is nearly always disregarded on the paper machine; and the consequences, which are already bad enough from a mechanical point of view, are even worse when we consider the efficiency of the work of the suction boxes, as we shall see a little later on.

So far, a certain number of boxes, from three to six of even more, depending on the quality of the paper, the speed of the machine, and other factors, are placed some distance apart under the machine wire. Usually, table rolls are placed in the spaces between the boxes. In some cases double or multiple boxes are used, that is, boxes having two or more compartments; but these have not always proved practical. They are heavy and awkward to handle; the suction in each compartment cannot be regulated independently of the other compartments; it is impossible to take out or cut out just one compartment; and moreover, when a single compartment requires repair the whole box must be taken out.

The spaces between the boxes interfere greatly with the proper working of the suction, because the extraction of the water, instead of being continuous, is interrupted each time the sheet leaves a suction box. As soon as the sheet leaves one of the boxes, some of the water which had been drawn to the lower part of the sheet and into the wire but had not been sucked into the box will flow back, partly on account of capillary attraction and partly on account of the atmospheric pressure acting under the wire in the space between the suction boxes. And this phenomenon will take place even if the spaces are quite narrow and in spite of the suction exerted by the table rolls in these spaces. As a result of this, not only must each box continue the work started by the preceding one, but it must also do over again part of the work which has already been done; and consequently a fairly high vacuum must be maintained in each box, which entails a relatively high power consumption, besides the other drawbacks already discussed.

The various considerations discussed above have led to the adoption of an arrangement in which the spaces between the suction boxes are eliminated, and the results were truly astonishing. On a certain machine having three boxes and using vacuums of 0.9, 1.0 and 1.3 meters of water in the first, second and third boxes, after the change was effected the vacuum was cut down to 0.1, 0.15 and 1.1 meters respectively, and yet the sheet was drier than before. The advantages of this patented arrangement* are quite evident from what we have just said: longer life for the wires, decreased power consumption for drying the suction pumps and the wet end of the machine, elimination of defects in the paper due to the wire, decreased wear on the wet felts, etc.

Each box can be constructed as an independent unit and supported so that its position relatively to the other boxes is easily adjustable; or else, several boxes may be constructed together as a unit in which each section is controlled independently of the others.

Practical tests have been carried out on a paper machine equipped in this manner, and the results have confirmed our conclusions. During the test all conditions were kept as constant as possible:

1) All wires were of the same make and of the same mesh;
2) The width of the wire was 1,650 mm. and the area 28.3 square meters;
3) The pressure and inclination of the wet press were constant;
4) The consistency of the stock was kept constant;
5) The same kind of paper was made during all the tests (wrapping paper made from waste paper and broke), but the speed of the machine and the weight of the paper were varied;
6) With the old arrangement of the suction boxes the vacuum was measured by means of a mercury gage; but with the new arrangement the vacuum was so low it had to be measured by means of a water gage.

The average production per wire was 211 tons before and 320 tons after the change, as shown by the the following figures which are for the last five wires before and the first seven wires after the change:

Production per wire, in tons

Wire	Before Tons	After Tons
1st	211	329
2nd	208	312
3rd	210	334
4th	260	304
5th	167	288
6th		300
7th		375
Average per wire	211	320

It is thus seen that the production per wire was increased by about 50 per cent., or, what comes to the same thing, the life of the wire was increased 50 per cent.

The following table shows the suction used and the dryness of the sheet before and after the change.

Suction, in meters of water in suction box No. 1	No. 2	No. 3	No. 4	Dryness of sheet at Wet Press % before	after	Weight per sq. m	Speed in meters per minute
	0.9	1.0	1.3	10	18.3	100	44
	0.7	0.9	1.4	11	18.4	130	33
	0.5	0.5	0.9	11.5	16	65	57
	0.6	0.9	1	11	17	80	50
	0.7	0.9	1.4	10	18.5	100	43
	0.6	1.0	1.3	11.5	18.4	100	43
	0.5	0.9	1.2	10.5	17.6	80	46
Average before change				10.8	17.7	93.5	45
0.12	0.09	0.16	0.78	13.6	19.2	130	35
0.1	0.07	0.14	0.78	16.6	18.9	80	54
0.13	0.08	0.15	1.18	17.9	19	80	54
0.05	0.04	0.10	0.26	10.3	17.4	130	35
0.10	0.08	0.16	0.52	14.5	18.9	130	35
0.13	0.10	0.20	1.05	15.3	20.2	130	35
0.10	0.12	0.18	0.26	11.8	22.2	160	27
Average after change				14.2	19.4	120	39

The following points should be noted in connection with these figures:

1) The first three boxes under the new arrangement worked under a vacuum of 10 to 20 centimeters of water; while before the change there would not have been any appreciable effect with such low suction. This is due to the fact that the edges of the boxes have become perfectly tight.

2) The total vacuum has been cut down by about half, and yet the sheet is drier. This is due to the saving in wire and in power already referred to. It also follows that the wire is more easily guided, that the wear on the edges of the suction boxes is reduced by half, and that the loss of sizing, loading, and color in the back water is much smaller.

3) The sheet is drier by about 30 per cent. when it reaches the wet press, making it easier to handle — it does not break as often at the press, and the life and production of the felts are appreciably increased.

This shows very plainly the advantage and importance of the improvement, which is very simple and can be easily, quickly, and cheaply adapted to the suction boxes of any paper machine.

A NORTHWEST TALE

The Timber Pirate, by Charles Christopher Jenkins. Toronto, McClelland & Stewart

Described as "the story of a man who pawned his soul" this tale will be thoroughly enjoyed by those who like a story of the great Northwest. It is certainly thrilling and full of exciting moments, the incidents being related by a man whose knowledge of the Northwest is obviously remarkable. It concerns a soul at war with itself, a man who the lumber jacks said had something inside him burning him up and filling him with hellery — a man whose boast was that he never prayed for anything, but asked only that he be given a sporting chance.

Acey Smith was a man obsessed by the desire for revenge, and it was only when he had gained his ends that he met the girl who changed his outlook in life, making him realize the price he had to pay for victory. The story is noteworthy for its unusual plot, its choice of language, and a certain beauty. It is a good book for a pulp or paper man to own.—Exchange.

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* French patent No. 511,466, Jacob Heess, Germany, and Robert Joseph Marx, England, Sept. 24, 1920. Papier 24, 118, March 1921.

The Curling of Fine Printing Papers*

By H. H. HANSON and H. H. HACKETT,
Eastern Manufacturing Company, Bangor, Me.

A few years ago the curling of paper was almost unheard of, but with the development of automatic printing presses it has come to be a very important factor in the making and selling of high grade printing papers. The printer demands high speed and production and in order to get results the paper must lie flat on the press, where the automatic feeders cannot fail to reach it. The initiative in the prevention of curl must come from the paper maker, because while the printer can do much to allay it, he cannot stop it altogether.

Along with other mills, we have had our share of curling difficulties and have found it desirable to study the subject from a fairly fundamental point of view. We do not claim to have as yet thoroughly mastered the problem, although we believe we have made a fair degree of progress. In this paper we endeavor to present the fundamental principles involved, our general method of attack and some of the experimental results and conclusions. As to application of results, we realize that the variation of stock, tackle and methods of operation in different mills in such that what might be a cure-all in one place may have no particular effect in another and that therefore each of you must consider our suggestions as something to work from rather than as directly applying to your own plant.

Print Shop Investigation

It is evident that an investigation of the causes of curling must start by a study of printing press operation, and the conditions in a print shop under which paper curls. We find first of all that the trouble comes almost always in winter and that it is particularly bad on very cold days. The atmospheric conditions of most print shops in such weather are, high temperature and low humidity, often as low as 20 per cent.

We find further that there are several kinds of curling, as follows:

(A) *Surface Action.* The individual sheets of paper lying in a pile on the press curl upward at the edges, the top sheet always curling the worst. The action seems to be progressive, several sheets near the top curl a little and each sheet as it becomes the top one, curling badly.

(B) *Set.* The whole pile of paper on the press may have a curved rather than a flat set to it. In such a case the individual sheet seems to revert to a former desirable curved shape as soon as it is lifted from the pile by the feeders and is free to move.

(C) *Static.* The individual sheet may stick to the press so that it is not easily removed after the printing has been done.

There may also be slight variations from or combinations of these three, so that it is not always easy to describe the action. These are, however, the primary movements and their elimination stops curling or at least reduces its effect by a very considerable degree.

Immediate Causes of Curling

The mechanism of the actions described under (A), (B) and (C) is as follows:

(A) Cellulose is hygroscopic and all paper contains more or less moisture, the amount being directly dependent on the humidity of the air to which the paper is exposed. For example, paper exposed to air at 65 per cent. humidity comes to equilibrium at 8 per cent. moisture content, paper exposed to air at 40 per cent. humidity at 5 per cent. When paper absorbs moisture it expands and when it dries, it contracts. Paper taken from a condition of equilibrium at 65 per cent. humidity and brought into a room at 40 per cent. humidity, immediately begins to lose moisture, and this action is acompanied by shrinkage. If now only one side of the paper is exposed to the new conditions, or if moisture leaves one side of the sheet more easily than the other, the dryer side shrinks more, becomes shorter than the wetter side and in order to adjust itself to this condition, the paper curls with the short side naturally concave. Most paper is shipped with a moisture content of approximately 6-7 per cent., that is, in equilibrium with air at about 50 per cent. humidity. It is evident that, if brought into a hot dry print shop at say 20 per cent. humidity, considerable drying and shrinkage will take place and if for some reason moisture can leave one side more easily than the other, curling will result. This is what happens when the individual sheets of an apparently flat pile of paper start curling on a press.

(B) Paper very often has a definite set in one direction and almost invariably it is the wire side that tends to be concave, being a little shorter than the felt side. This effect is generally not noticeable in a pile of paper of large size, but when a ream is cut down to small sizes for printing, it becomes immediately apparent. When the single sheets are fed into the press, the set becomes more pronounced because each sheet is free to comform to its natural shape. The curved shape was originally given to the paper by being dried in this position or by being dried harder on one side than the other. No amount of stretching or pressing in a pile will permanently eliminate this set.

It is advisable here to mention one condition necessary for curling such as described under (A) and (B), namely the coherence of the paper. No paper will curl if each individual fiber is free to shrink by itself as in a blotter. It is necessary for the individual fibers to be cemented together, so that shrinkage is transmitted to the paper as a whole. The amount of curl may or may not be proportional to the percentage of cementing material, depending on the kind of binder and its methods of application.

(C) The curling or sticking action described under (C) is due to static electricity developed by the friction of the moving parts of the printing press. Static, of course, is always worse on cold, dry days. The paper manufacturer cannot stop static in a print shop, but he can help its action on paper. Very dry paper is conducive to static troubles. Paper containing 6-7 per cent. moisture will run perfectly safe under severe static conditions.

Fundamental Causes of Curling

Behind the immediate causes of curling illustrated above we must find the underlying causes in order to achieve success in prevention. We believe, as you will see, that almost every operation of paper making is involved to a greater or lesser extent. It is apparent that the investigation must find the factors which produce two-sidedness and set and those which cause a sheet of paper to act as a coherent unit rather than individual fibres. Machine dried and loft dried papers must be studied separately, because the final operations may have an important effect. Up to the operation of the tub sizing however, we may consider all papers under one class.

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*Paper Read Before the Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association, Hotel Nonotuck, Holyoke, Mass., November 15.

(A) *Beating and Jordaning.* The moisture contained in cellulose may be of two kinds: it may be present as a mere physical mixture, or it may be in chemical union with the cellulose molecule. In a beater most of the water present is in mere mechanical contact with the stock but a little is bound to it by chemical ties and this we call chemical moisture or moisture of hydration. The presence of a comparatively large percentage of moisture of hydration gives us slow or greasy stock. We all know that mechanical attrition in the beater increases it. Technically speaking, its formation is accompanied by a gelatinization of the fibres together in the web of paper. The moisture of hydration can be thoroughly removed only by high temperature drying, it is the last to leave the paper on the drying cylinders and its removal is accompanied by excessive shrinkage of the fibres and web. Moisture of hydration probably acts in several ways to make paper curl.

1. It cements the fibres together so that shrinkage and expansion of individual fibres are transmitted to the paper as a whole.
2. Unless it is thoroughly removed on the drying cylinders, the paper produced is liable to excessive shrinkage when exposed to the drying atmosphere of a print shop.
3. A third cause has to do with sizing and will be taken up under that subject.

(B) *Beater Sizing.* Rosin Size precipitated by alum acts as a cementing material. It does, however, tend to make paper waterproof and should therefore prevent quick changes in moisture content and consequent curling. Unfortunately the suction under the wire acts to partially remove the size from the wire side. Thus the paper is less waterproof on the wire side than it is on the felt side and when the finished paper is brought into a drying atmosphere it is reasonable to suppose that moisture leaves the wire side more rapidly.

Here we must again bring in the effect of hydration. The greasier a stock is the better the sizing but also the more important from a curling standpoint, the higher becomes the vacuum in the suction boxes and roll. The sheet is now more compact, less size is drawn *through* the sheet and a greater proportion is probably removed from the wire side. We thus have a sheet more two-sided from a size standpoint and more liable to curl.

(C) *Alignment of Fibres.* The shrinkage of fibres is very largely in the cross section rather than the length. The fibres tend to align themselves on the wire in the direction of travel and since the curl takes place in the direction of greater shrinkage we almost invariably find paper curling with the curly edge in the machine direction. Longer or harder beating increases the fraying of the fibre ends ond decreases machine direction alignment, but because of increased hydration probably does not help curling.

(D) *Pressing and Drying.* Pressing may make paper two-sided. The web coming off the wire is smooth on the wire side and rough on the top or felt side. The first press smooths the felt side and roughens the wire side. The second press which is usually the last on fine paper machines does the opposite.

We thus have the paper going to the driers two-sided in two ways, comparatively less size on the wire side and a smooth wire side. It is easy to see that the lack of size on the wire side will cause that side to dry, comparatively quickly. It may also be a fact that the smooth wire side gets better contact with the driers than the rough felt side and further developes the two-sided drying . The effect of these conditions would be greater shrinkage on the wire side and a curl set towards that side.

Hard drying is necessary to remove a sufficient amount of the moisture of hydration. If this moisture is not removed on the machine or by further drying before the paper is shipped it may cause trouble in a dry, hot print shop.

(E) *Tub Sizing.* While tub sizes, both animal and vegetable, have the effect of rosin in giving ink resistance, they differ from rosin in one very important quality, namely that they are not moisture-proof. Everyone knows that both glue and starch absorb moisture and that when they do they expand very appreciably It is not so evident to the paper maker but just as true that when they dry out and lose moisture they contract just as much. Investigation shows that both glue and starch undergo greater changes in moisture *content and dimension* than does cellulose under sumilar humidity variations. These qualities do no great harm in themselves but may, if their application of dryness is different on the two sides of the paper.

It is now time to divide the discussion into machine dried and loft dried divisions. Let us first take machine dried. We have seen that paper is two-sided as to rosin size and that therefore it is more moisture-proof on the felt side. It is evident that this condition will induce greater absorption of tub-size on the wire side. If now drying is immediate, as on machine dried paper, the size has no chance to permeate the sheet and equalize. The drying on the second nest continues to be two-sided and the paper is in a worse condition for curling than before it entered the tub. Now, we not only lack rosin on the wire side but we have on that side a comparatively larger amount of a substance more hygroscopic and more liable to large dimension changes than cellulose.

Tub-sizing does not have nearly the effect on loft dried that it does on machine dried paper. In the first place the size has plenty of time to permeate the sheet so that it is more evenly distributed throughout and secondly the loft drying is not two-sided.

(F) *Finish.* Finish acts to inhibit curling by decreasing the set towards the wire side. This is probably accomplished not by stretching the wire side, as this would give only temporary relief, but by actually pulling the fibers and bonding material slightly apart. We find therefore that highly finished papers like ledgers and flats give little or no trouble.

(G) *Pole-Mark.* One of the worst, if not the worst factor in the curling or loft dried paper is the set given to the paper in drying over a pole. The tubsizing operation expands the sheet normally about three per cent. In drying, the paper should shrink about the same amount. That part of the paper hanging down below the pole does shrink unrestrainedly but that part over the pole is prevented by the weight of the sheets in close contact at that point. After drying, this part is larger than it should be and we have a distinct bubble in the sheet which only high finishing such as is generally not allowable in loft dried bonds, will take out. The bubble may seem to partially disappear in a pile of paper but when small individual sheets are fed into the printing press it shows up if printing conditions are poor.

Conclusion

It is clear if our work has been well done and conclusions properly drawn, practically all operations of paper making affect curling. To overcome the obstacles in the way of producing bond paper that "lies flat" seems in view of this an almost impossible feat. The problem, as you know, is further complicated by the fact that steps taken to stop curl may seriously interfere with other qualities of paper. For example a soft, poorly sized paper does not curl but lacks bond characteristics. We believe, however, and practical results have proved this, that by directing preventing efforts all along the line of manufacturing, curling can be stopped. Complete success means proper methods of testing, careful instructions to the crews, and everlasting watchfulness by the foremen.

SHORT COURSES IN EXPORT TRADE AT McGILL AND TORONTO FOR EXPORT MANAGERS AND ASSISTANTS

The University of Toronto, Toronto, and McGill University, Montreal, have announced the establishment of Short Courses in Export Trade to begin in Toronto on January 15th to 27th, 1923, and in Montreal January 29th to February 10th. In preparing the courses, the most thorough co-operation has been in force between the Universities, the Department of Trade and Commerce, Ottawa, and the Canadian Manufacturers Association. To make a success only requires now the attendance of interested export men.

An outline giving full particulars of the course at each University accompanies a letter sent out by Messrs. L. L. McMurray and Alex. Marshall, of the C. M. A.

Nearly everyone these days has more than a glimmer of the desirability of increasing our exports. Statesmen, bankers, business men and the rest of us are in general agreement. In discussing the development of export trade, some justification exists for the aphorism that "nothing is impossible." During, and immediately after, the war, we sent cotton goods to Manchester, hardware to Birmingham, and came within an inch of sending coals to Newcastle.

War conditions caused that, one may say — Quite! But these were only extreme examples of the international exchange of commodities that is going on continuously, and were proofs that it is the underlying conditions and special economic causes which create opportunities for the development of trade among nations.

It is well known how carefully Canadian financial, crop and general business conditions have to be studied in order to make continuously successful selling campaigns in the most favorable localities. It is certainly advantageous to know how to get the same broad knowledge of export markets. Having this broad knowledge as a basis, such factors as the partial failure of the cotton crop in West Africa for several years in succession will mean to you not so much the reduction of the market for enamelware, shirts, burlap and baling hoops, but rather an increased demand for fencing, mowers, binders and other implements, lumber, metal roofing, and cream separators, etc., because the land formerly used for cotton will now be used for mixed farming.

It is an interesting commentary on the application of science to business that the Rt. Hon. Reginald McKenna, former Chancellor of the Exchequer in the British Government and now Chairman of the London, Joint City and Midland Bank, was able to say to the Convention of the American Bankers' Association in New York recently that "It is not many years ago — it is well within my own recollections — that a want of understanding of sound principles of banking led to repeated financial crises which were then believed to be inevitable. As they uslually happened at intervals of ten of eleven years, many serious persons attributed them to the variations which occur in the spots on the sun. These spots may affect the weather and, through the weather, the harvest, but a wider knowledge of banking and of currency requirements has taught us how to escape their malign influence on credit."

If excuse were required for reiterating the importance of the study of broad economic relationships, surely it is afforded by this pronouncement from a great English economist and statesman.

A number of large Canadian exporters have given much time, thought and study to the development of export markets for their commodities. Generally speaking, those who have prospered best in export trade are those who have gone most fully into the preliminary conditions before actually making a start. In other words, they have been ready to apply larger measures of science and detailed knowledge to their conduct of export affairs. The main objects of these courses are to bring out the weak points and the strong points of the men who are handling the export business; to let them examine themselves in the light of economic laws; to put at their disposal methods of sizing up commercial conditions and prospects in different countries, to shadow forth the romance and pervasiveness of international trading, and to let them deduce the advantage of applying an increasing degree of understanding and knowledge to their important work.

Already a number of export men woh have discussed the question with the Department and the Universities feel that this is an important step in advance, and will be glad to attend one of the courses.

Applications should be made to The Registrar, McGill University, Montreal, or to Mr. W. J. Dunlop, Director of the Extension Department, University of Toronto, Toronto. The fee is $5.00. These courses last two weeks. The Toronto session is from January 15th to 27th, and at McGill from January 29th to February 10th.

FRENCH PAPER INDUSTRY FACING CRISIS

According to information supplied by the "Office National du Commerce Extérieur," from data printed in Papyrus, the organ of the French paper industry, and gathered by interviewing several leading manufacturers, the French paper industry is facing a serious crisis due to the increasing importation of pulp and paper, particularly from Norway and Sweden.

Not only are manufacturers taking steps to have the tariff on these commodities increased, but are turning their attention to the resource of Alfa grass in the French colonies of northern Africa, in the hope of obtaining a fiber there with which to meet foreign competition in supplying the home demand.

The way to feel like doing our duty is to do our duty whether we feel like it or not.

In morals, as in geometry, a straight line is the shortest distance between two points.

TREND OF PRINTING SALES AND PAPER PURCHASES IN THE UNITED STATES

"Since the early months of 1921 the General Service Department of the American Writing Paper Co. has been sending broadcast to printers this Graphic Chart of Printing Sales and Paper Purchases," says Mr. Jas. A. Bordon, director of this department.

It is issued principally for use in comparing the trend of your business with that of the country as a whole. And therein lies its chif value.

If you have not already done so, consult your books and cost records, going back to the year 1918. Set down as one hundred per cent (100 %) the sales for the year, do likewise with your paper purchases and your total productive hours for all departments. Divide these totals by 12 which gives you the average monthly basis on which to figure your percentages for each succeeding month.

On this chart mark in red ink, using the identical scheme of marking for the three classifications as is printed in black, beginning on the one hundred per cent (100 %) line at the point indicated as December, 1918, and follow across to January, 1919. From here let the lines rise or fall each month according to your own figures of percentages above or below one hundred percent (100 %).

You will discover that there is a real interest in these comparisons and that the purpose of this chart is to give you a barometer on your business.

The figures for printing sales and paper purchases for the month of September show a continued increase as was anticipated, says the American Writing Paper Co.

In commenting further on this chart we will refer to some of the conclusions reached at the Annual Convention of Economic Research at Harvard University. This committee has made some very thorough investigations of the world conditions existing at the present time and the conclusions carry a great deal of weight.

It was the concensus of opinion at this meeting that in spite of all predictions to the effect that prices would return to a pre-war level this would not be the case due to the fact that conditions which exist to-day are very different to thos existing in England in 1815 and in the United States after 1865. Unless there is some unforseen occurrence such as a policy of very drastic currency deflation in Europe the continued increase in monetary stocks of gold will prevent a decline of prices during the next ten years. In as much as the restoration of currency to pre-war standards in the European countries which have been seriously affected by the war would probably result in national bankruptcy for a number of them it is not considered likely that there will be any considerable change from th general price level existing at the present time. This, of course does not mean that there will be no periodic fluctuations but rather that there will be no pemanent downward trend for a few years to come.

The results of the various investigations into the basic conditions affecting industry led to the following predictions rgarding business conditions during 1923. The coming year will be one of business prosperity which, however, will probably culminate and start into a decline before the year is over. It was pointed out that some of the measures which are commonly used to indicate the trend of business would probably move upward whereas others would decrease. Among those that are expected to advance are interest rates, wages, cost of living, railroad carloadings, bank loans and iron and steel poduction. Among those that are expected to decline are the price of bonds, amount of building construction, and the number of business failures.

As business is expected to continually improve until the later part of 1923 the probability is that wholesale commodity prices, the volume of manufacture and products and stock prices will also move up during this period, reaching their peak at approximately the same thime that a period of decline is expected to start. It was pointed out that the halting of the present business expansion would be due not to a shortage of credit, but to high wages and a shortage of labor which would cause excessive manufacturing costs and a consequent dwindling of industrial profits.

Activity in the printing industry will undoubtedly be maintained at a high level until the first of the year. During this period printing prices will be moderately upward, or at least stable, rather than downward.

ALEXANDER BUNTIN

Paper circles in Toronto and Ontario generally were shocked on Dec. 11 to learn that Alexander Buntin, head of the paper jobbing firm of Buntin-Reid Company, Limited, Toronto, had died during the morning. It was known to only a few that Mr. Buntin had been taken ill at his office on Friday last. He was taken to his home 15 Elm Avenue in an unconscious condition and lingered until Monday morning when death ensued. Mr. Buntin's sudden striking down in the vigor of his manhood will be deeply regretted by his hosts of friends in the pulp and paper business. He was fifty-eight years of age and he had led an active life which included periods spent on the sea and on the open spaces of the West. As a business man he was thoroughly familiar with the paper game and greatly expanded and developed the paper business with which he had been connected for years. "Alex" Buntin as his friends always knew him, was the son of the late Alexander Buntin, proprietor of the Valleyfield Paper Mills, and was born in Montreal. He was educated at Craigmouht College, Edinburg, Scotland, Bishop's College, Lennoxville, and Kingston Collegiate Institute. After serving two years in the mercantile marine service, and a brief experience cattle ranching in Arizona, he went to Valleyfield where he got his experience in paper-making and later succeeded his father as the head of Buntin-Reid and Company. The late Mr. Buntin was looked upon as a keen, shrewd business man and this was reflected in the great success he met with in his management of the business in Toronto and in Valleyfield. It was in 1894 that he became sole proprietor and manager of the business and continued success marked his administration of the enterprise during his regime. He gathered around him a competent staff, his warehouse manager being R. J. Flynn. For some years past the late Mr. Buntin had spent some time at Atlantic City each year and he frequently relinquished the cares of his business for a holiday in hunting and fishing grounds. He married the second daughter of William Denoon, of Montreal, in 1892 and is survived by two daughters, Mrs. W. F. Phillips and Mrs. John Boyd, of Toronto. Although the funeral took place privately in Toronto on Tuesday many evidences of sympathy and esteem from the paper trade of Toronto and the provinces generally found their way to the family residence.

It is not the guns or armament
  Or the money they can pay,
It's the close co-operation
  That makes 'em win the day.
It is not the individual
  Or the army as a whole,
But the everlastin' teamwork
  Of every bloomin' soul.
    Kipling.

The Vital Importance of Effective Sales Letters

By HENRY H. MORSE, Chief, Specialties Division

In "Commerce Reports"

[Good sales letters are required to produce good results. It is a waste of money to buy names of good prospects and then circularize them with letters that are not sales-letters, and will not make either sales or friendships. Business must be built on confidence in the house and confidence in the product, and this can be established in the minds of prospects in other countries by readable, courteous, attention-getting sales letters.]

Sometimes when a business man reads his morning mail he can not help wondering whether the writers of some of the letters realize what a letter delivered to the addressee costs the sender in actual money. In conference, when the question of sending or not sending a letter comes up, some one may jokingly say, "Oh, let's send a letter; it costs only 2 cents." As a matter of fact when one considers the writers' salaries and related factors, it is found that many of the letters cost the houses that send from 50 cents to $1 apiece; and this applies to houses that are sending out many sacks of mail every night.

It is difficult to understand just why a house spending 50 cents to send out a letter should send one that is really not worth a nickel. In addition to the cost of actually getting out the letter, one must consider the value of the opportunity that may be jeopardized or forfeited if the letter is ineffectual. One can not well write a man a fourth letter of the same purport if three preceding letters have failed to produce the desired result. If the first letter does not prove effective, the opportunity is usually lost and it is very doubtful whether it can ever be retrieved.

Example of Ineffective and Harmful Correspondence

But the strangest circumstance is that of a man who purchases lists of prospects, paying a rather high price per name, and then circularizes them in the most mediocre manner. A few days ago an instance of this came to the attention of the Bureau of Foreign and Domestic Commerce. A manufacturer in New Jersey wrote as follows:—

"Do you know anything about the Blank Service Bureau? They furnish manufacturers with worked-up inquiries at $1 apiece. We have found that their inquiries, when worked, will not produce answers to the letters. Is this a legitimate company?"

When that letter was read it was felt at first that fraud had probably been perpetrated and that the service bureau mentioned was preying upon the gullibility of the American exporter in selling him lists of worthless names at $1 per name. But such was not the case. It was a simple matter to get in touch with the service bureau and to obtain from its managers a statement as to just how their lists are made up. If their statements were correct (and there was no reason to doubt them), their method of compiling these names is ingenious and sound, and the lists should have produced results. The second letter from the complaining house brought copies of the correspondence between that house and one of the prospects. A letter of solicitation addressed to a house in Mexico and written in English read as follows:—

1. We have been informed by the Blank Service Bureau that you are interested in men's wearing apparel.
2. Men's welt and McKay sewed shoes.
3. Reversible wide silk cravats of the latest pattern.
4. A well-known brand of men's silk hosiery.
5. Leather gloves of domestic manufacture.
6. Soft and stiff felt hats bearing a well-known local brand.
7. Remember, we are headquarters for the most complete line of men's furnishings.

P.S. — Inclosed herewith you will find our complete buyers' guide on all the lines which we carry.

This letter is reproduced as it was written, except for changes in the names of the articles, so as to conceal the identity of the house. In reply to that letter the firm received the communication that follows:

"Replying to your favor of the 16th, we beg to inform you that we are not at this time in the market for the lines which you are so kind as to offer us. Our stock in this line is complete at present, but should we need anything in the future we will be glad to let you have our inquiry. We thank you for the attention and remain."

Two things about this letter deserve to be noted: First, instead of being written from the Mexican head-quarters, to which the letter of the 16th was addressed, it was written from Eagle Pass, Tex., where the Mexican firm evidently maintains a branch. It is possible that this is a buying branch stratefically located for the importation of goods into Mexico. It would appear that an alert sales manager should have investigated and considered the possibility of doing business with the house at Eagle Pass. The second noteworthy point is that the letter was written in English — and rather good English. The would-be exporter, instead of taking advantage of this letter from Eagle Pass and following up with a vigorous sales letter, quoting terms, datings, and other things that would naturally interest a man who expected to be in the market a little later, evidently became irritated because the first letter did not bring an order and wrote as follows:

"Replying to your letter of the 30th. The Blank Service Bureau told us that you were in the market for men's shoes. Will you kindly let us know if this statement was correct under date of August 14th? We received notice from them on the 16th and our letter was written on the same date. The articles we sell are illustrated on the inclosed folder. We would like to hear from you in regard to the Blank Service Bureau because we are paying them for these inquiries, and if they are not alive or if the inquiries are faked we are paying out our good money to no good purpose whatsoever."

The house at Eagle Pass replied to this deplorably injudicious letter in the following dignified way:

"Replying to your favor of the 6th inst. we beg to inform you that we are not at this time in the market for your men's shoes that you are so kind as to offer us. Our stock in this line is complete at present, but should we need anything in the future we will be glad to let you have our inquiries. We thank you for your attention and remain,"

"Very truly yours."

So far as the correspondence sent to the Bureau shows, no reply to this letter was sent; yet any man possessing the true instinct of salesmanship would have addressed himself again to this Mexican prospect with one of the most carefully drafted, explicit sales letters that he was capable of writing.

Defects That Tend to Repel Prospective Customers

The Bureau of Foreign and Domestic Commerce endeavors to prevent American exporters from practicing fraudulent schemes in connection with their export business but it has no way of disciplining the merchant who rushes into the export field with such letters as the two that have been quoted, which constitute almost an affront to the intelligence of the foreign merchant.

In the first letter there was not a particle of salesmanship. There was no "approach"; there was no effort to attract favorable attention; there was no endeavor to interest the prospect; there was no room left for a "follow-up"; the letter was written in English to a Mexican firm, and it began with the bald statement that this prospective customer had been first heard of through the means of the service bureau. How much more effective the letter would have been if the writer, instead of saying that the addressee's name had been purchased of a service bureau for a dollar, had written in good Spanish, "The enviable reputation which your excellent house enjoys because of its many years of honorable dealing moves us to call your attention to our superior line of merchandise and our facilities for serving you as a house of your standing deserves to be served."

There was nothing in the letter to create confidence on the part of the recipient in the sender of the letter, no banker's reference, no credit reference, nothing to indicate that anyone who had ever bought the products before had found them satisfactory, nothing to show that the house was in a position to cater to business in Mexico, nothing to prove that it knew how to pack goods for Mexico, not a word regarding terms or method of payment, and certainly nothing that would tend to induce the buyer to abandon an already established connection.

It is hard to imagine conditions so unusual that a letter of this type would get an order or even a reply. In sending this correspondence to the bureau the house writes:

"These are the first people that have replied to any of our inquiries and you will notice that they say that they are not interested at the present time in our merchandise, although the service bureau claim that these inquiries were all alive. Remember that this is the first answer that we have had from any of the inquiries that they sent us and again this inquiry is not interested."

Requirements Deserving Careful Consideration

These letters that have been quoted, and that are obviously bad both in conception and in execution, are really not a great deal worse than much of the mail that is used in an effort to sell goods. Albert Sidney Gregg, in the October issue of The Nation's Business, gives a very interesting report on domestic mail-order literature, which Stanley B. Moore, of Cleveland, investigated, and he arrives at the conclusion that sales can be made by mail if a letter is well typed on good stationery, if a stamp is properly affixed, if too much advertising is not inclosed, if the envelope is sealed, and if the letter itself is a true sales document.

For mail to foreign countries one should go further than this. In general, it is not well to rely on a single letter. A series—even if it consists of only three—is far better, but there should be a sequence to the letters. The first letter should attract favorable attention and create interest; the second should stimulate that interest and establish a feeling of confidence; and the third should be a delicately worded sales document, with plenty of force and directness but without any appearance of haste or pressure. The letters should be individually typed on good stationery and should be carefully signed with pen and ink by some officer of the company.

It sometimes seems that the signature is the most important part of a foreign sales letter. The foreigner, particularly the Latin American, is much more sensitive to slights and discourtesies than are the majority of American traders. The present writer has always made it a rule, even when his mail might run to 300 or 400 form letters in one day, to examine each letter personally, to make sure that the name and address are correctly spelled and the salutation is correct, and to sign each letter with pen and ink with his own hand. It is always a temptation, when a man is busy and when he is writing to people who are not familiar with his signature, to allow the secretary or the stenographer to sign the mail, but is it not possible that the shrewd Colombian (for example) can tell whether the signature is written by him or by a stenographer, even though the stenographer's handwriting may be better and more legible than his?

A signature that has been dried with a blotter sometimes resembles one made with a rubber stamp, and more meticulous persons may consider it worth while to permit the signatures to dry with all the ink on them before the letters are folded.

These are little things but they make the difference between a letter that a man will read and a letter that he will throw into the waste-paper basket without reading. They make the difference between money thrown away and money invested in letters that build good will and ultimately produce profitable orders.

A FEELING OF CONFIDENCE

"From recent visits I have paid in an official capacity to various parts of the province during the past three weeks, there are increasig signs of prosperity visible on all sides," said R. W. Gould, secretary of the Quebec Province Division of the Canadian Manufacturers' Association, on his return from a series of visits to local centres.

"Mills in many places are working 24 hours a day, with plenty of orders ahead, and business is generally on the upgrade. There are practically no idle industrial plants in the province today, while many of them are working over-time. That is in very strong contrast to the position I had to face a year ago, with plants either working short time or closed down altogether."

"Merchandise stocks throughout the country are low today," said Mr. Gould, "and retailers are starting to stock up well, with much more confindence than for a long time past, which means business all the way from manufacturer to consumer. Everywhere I went I found a feeling of absolute confidence in every business centre. It was real pleasure to go through the province this time, because on my trips last year I found everybody with a long face and drawing in on business, while to-day it is just the reverse."

NEW BRUNSWICK NEWS

The St. Stephen Board of Trade which has been fostering the establishment of a pulp mill at St. Stephen will not divulge the name of the company that has been interested. It is known that engineers employed by the mysterious company have been in St. Stephen for the past few weeks, making surveys of several sites along the St. Croix river. Many guesses have been hazarded as to the identity of the concern, but the St. Stephen Board of Trade refuses to announce the name, fearing likely that publication of the name may induce other cities and towns to seek to induce the company to locate elsewhere than St. Stephen before final arrangements are perfected.

Options have been taken on two sites in St. Stephen for the company, and it is reported the intention is to produce paper as well as pulp. In the course of a few weeks it is expected that definite announcement can be made. Hopes are expressed that building operations will be started in the spring.

The Fraser Companies, Limited, are cutting much pulpwood this winter in New Brunswick. The increase in cutting pulpwood by this firm is but one of the increased cutting plans of this big concern. An increase has been noted in the cutting of all varieties of wood. Fraser Companies, Limited, are operating their Edmundston, N. B., pulp mill to capacity.

This firm has in mind the construction of a paper mill at the mouth of the Tobique River as it empties into the St. John River. The permission to erect a dam at this location has been given by the New Brunswick government, despite the protests of salmon fishermen who claim that such a dam would ruin the Tobique river as a salmon fishing centre. Owing to the prevalent dullness in the paper market the Fraser Companies, Limited, have not started building operations, but indications are that a start will be made in 1923, perhaps in the late spring. The mill will be one of the largest in the maritime provinces and will be in the midst of vast pulpwood areas controlled by this company along the Tobique and upper St. John rivers. Fraser Companies, Limited, have now more employees than at the same period of last winter.

Sydney Jones, manager of the Nashwaak Pulp and Paper Company's mill at St. John, addressed the Rotary Club of St. John recently. His subject was paper making. Mr. Jones is a son of N. M. Jones, general manager of the company and former resident manager of the St. John mill.

H. A. Oak of Bangor Me., who died recently was a brother of the late Charles E. Oak who was president and manager of the New Brunswick Timberlands and Lumber Company and greatly interested in pulpwood areas in New Brunswick. H. A. Oak was employed with his brother for some years. The late C. E. Oak died but a short time ago.

The Bathurst Company, Limited, is proceeding satisfactorily with the new paper mill at Bathurst and it is expected that the mill will be ready during the late spring. The extension to the pulp mill will be started in the spring, the production annually of the pulp mill being nearly doubled.

V. E. Foster, premier of New Brunswick, is said to be interested in a new pulpwood deal by which thousands of acres of pulp lands in the maritime province will be acquired through merger.

The four masted schooner, Jean Kielberg, Capt. Publicover, made one of the quickest trips in years from Lunenburg to New Haven with a cargo of pulp.

Cutting operations of the Pejepscot Company, along the Salmon River in New Brunswick, have not been discontinued as one report has stated. This company is still cutting on its large tracts of pulpwood fronting on the Bay of Fundy and extending for some miles up the Salmon River. The company barges towed by the company's ocean going tug transports the pulpwood to Bath, Me. Although stormy weather during the winter months forces a curtailment in the shipping operations, nevertheless, shipments are frequently made from Salmon River, the New Brunswick headquarters of the Pejepscot Company. This company controls two paper mills in Maine and may construct a new mill on its property at Salmon River during 1923.

TIMBER LIMIT FOR EX-SOLDIERS

A timber stand of 250 acres on the South Shore, about 70 miles from Montreal, has been purchased to provide work for ex-fighting men by the Montreal Ex-Fighting Men's Association, subject to a favorable report by a forestry expert. The arrangements in connection with the inspection and report are being carried out by General J. B. White, Woodlands Director of the Riordon Company.

The timber standing will be used by the Ex-Fighting Men's Association to provide work for single men, the intention being to establish a model lumber camp. Some of the wood will be sent into the city of Montreal in the rough to a timber yard which the Association will set up. Here unemployed married men will be employed in the finishing of the wood. Altogether it is expected that the project will give employment to about 120 men, 40 in the lumber camp and 80 in the Montreal yard.

TOOK TIMBER BOOM

A fine of $50 and costs was imposed on Adrian Larocque, of Pointe Fortune, Que., for stealing a timber boom worth $300 from the Federal Government. The accused claimed that he had no idea that the boom belonged to the Government, or he would not have touched it.

A FLASH OF INTELLIGENCE

"Why leave them blank"

Most offices are supplied with blotters in two ways—those which are furnished by other firms and valued by them because of the opportunity to present an advertising message and those supplied by the firm itself, which are generally blanks cut from a full sheet.

There aren't enough advertising blotters from other people to supply the continuous requirements of any large corporation. So, the Stationery Department is called upon—but, why leave the blotters blank?

Here is an opportunity, in larger companies, which can be used to great advantage. Has the President or executive no short message to send to the employees? It is desirous to make savings in various ways? Wouldn't a short word or two of inspiration help now and again? Also short pithy sayings on 'loyalty' and 'enthusiasm' or presenting Company facts in order to build these self same characteristics?

By using printed blotters Railways could send messages to ticket agents, shipping clerks, etc. Banks to all members of the staff. Insurance Companies to their staff and agents. Commercial concerns to their travellers, dealers, agents, and office staff.

PULP AND PAPER NEWS

The Belleville Paper Company, which are large manufacturers of straw board, are installing new steam boilers and making other alterations calculated to increase the capacity of the mill. They are now chiefly engaged in making straw board for corrugated purposes.

Considerably increased output will follow certain alterations and additions now going forward in the Frankford mill of the Canada Paper Board Company. New pumps and screens and other equipment is being installed and by the first of the new year the mill will be in a position to greatly increase its capacity. The plant has been running at capacity for some months and the company reports a well-sustained demand for its output of board.

It is understood that following alterations at the plant of the Specialty Paper Company at Camden East the company will embark on the manufacture of higher grade papers and will put lines of book and writing papers on the market. The firm are using a special de-inking process in connection with their use of old rags and it is stated that the process is proving successful in conjunction with rag stock.

The Don Valley Paper Mills, Toronto, are installing a pulp conveyor for the carriage of pulp from the cars to the storage room which will greatly facilitate the handling of the product. It is expected that the installation will be complete within about two weeks time.

Edwin Crabtree, representing several Quebec pulp mills, spent a few days in Toronto on business last week.

Paper manufacturers in Ontario were advised last week of an advance in the price of wet felts. As far as can be learned the increase applies to the one line only and woollen felts are not affected, the latter being sold on a yearly contract basis.

At a meeting of the directors of the Spanish River Pulp and Paper Mills Company, Limited, held at the head office in the Bank of Hamilton Building, Toronto, on Dec. 17 the usual quarterly dividend at the rate of seven per cent on the common and preferred stocks was declared. The quarter ends on Dec. 31st.

The No. 1 newsprint machine of the Fort William Paper Company at Fort William is about ready to turn over and is now being turned up preparatory to starting her on her steady run which will likely be between Christmas and New Year. Good progress is also being made with the installation of the second machine which it is expected will be in operation some time in January.

Duncan Chisholm, Jr., son of Duncan Chisholm of the Mattagami Pulp and Paper Company, Bank of Hamilton Building, Toronto, is at his home in Toronto suffering from the effects of a severe accident he met with while working in the north country.

Jean Rolland, mill manager of the St. Jerome mill of the Rolland Paper Company, was a visitor to the Toronto office of the company in the Bank of Hamilton Building last week.

A meeting of the Educational Committee of the Canadian Pulp and Paper Association was held in Toronto on Dec. 18th when the chief business was the preparation of the report of the committee to be presented at the annual meeting of the Canadian Pulp and Paper Association in Montreal, Jan. 24th to 26th.

Russell B. Peters, of the Paper Board Corporation, Tonawanda, N. Y. was a business visitor in Toronto last week.

R. J. Flynn, sales manager of the Buntin, Reid Company, Toronto, is retiring this year from municipal work after having served two years as Mayor of Weston, near Toronto.

The $100,000 action of E. W. Backus, the millionaire pulp and lumber king of Minneapolis, against the Toronto Evening Telegram for alleged libel came to an end on Dec. 20 in the disagreement of the jury. The case will not be renewed unless the plaintiff chooses to start it afresh. While neither side scored, it has been an expensive proposition, the 17-day trial and preparatory work costing somewhere in the neighborhood of $100,000. Among the witnesses examined in the case were Premier Drury and several Ontario Cabinet Ministers. The plaintiff claimed damages for alleged libelous statements made by the Telegram in connection with his acquisition of the English River timber limits.

Negotiations between Provincial Hydro authorities and representatives of the Ontario Government and the Great Lakes Pulp and Paper Company continue in Toronto from day to day at the Parliament Buildings, with the meagre information that progress is being made slowly but surely. Since negotiations began a forthnight ago alternative agreements have been submitted by both sides, which have been amended and re-amended at the instigation of either party, and it is said that the principals have got well under way in the discussion of the price to be paid for power by the Great Lakes people. The matter is still dragging along, however.

The Buntin, Reid Company, 13 Colborne Street, Toronto, have sent out notices to the trade announcing the appointment of W. H. Lytle as manager, R. J. Flynn continuing in his position as sales manager. The announcement states that the company will continue to do business and maintain the policy adopted by the late Alexander Buntin. Mr. Lytle is an old employee of the firm having been the office manager for years.

There is every indication that the meetings of the Canadian Pulp and Paper Association will be exceptionally well attended. A large number of hotel reservations have already been made, and the applications for tickets for the annual dinner are coming in at a good rate. The subjects to be discussed at the annual meeting of the Association, are of paramount importance to the industry, especially in view of the further development of the newsprint section. The programs of the Technical and Woodlands section are attractive in the way of the questions to be dealt with, and it is expected that the discussions will bring out many points of value to those interested.

Mr. W. Gorman, of the Montreal office of the Provincial Paper Mills, Limited, arrived at Sydney, Australia, on December 20. He is on a visit to Australasia, with a view to extend the export trade of his company.

In discussing the $12,000,000 dam and water power project which he is developing at Grand Discharge, Quebec, James Brodie Duke, the tobacco magnate, declared at his office, New York City, last Saturday that he had been interested in this development for almost ten years and that he had plans completed for starting the work when the war made necessary the abandonment of the project temporarily, materials and labor having become prohibitive. "But I realized from the first moment that I inspected the property," said Mr. Duke, "that Lake St. John and its great outlet were made by the Almighty for man's development. The great power which we are developing at the Grand Discharge of Lake St. John will be by far the largest in the world. When we have completed the two power plants at an approximate cost of $75,000,000 we will have 1,200,000 horsepower for sale at cheap rates. And, mind you, the horsepower will be generated by a force of water which has hitherto been wasted — running into the sea for thousands of years. To reproduce a like amount of horsepower with coal would take 4,000,000 tons." Mr. Duke stated that the first plant at the Great Discharge should be in operation in two years. This will generate about 400,000 horsepower and will cost to complete about $12,000,000. Twelve men will run this plant for twenty-four hours a day — or four men at a time in three eight hour shifts. Price Bros. & Co. Ltd., which will become the largest manufacturers of newsprint paper in the world, have already contracted for half of this first 400,000 horsepower, according to Mr. Duke. Besides his great tobacco interests, Mr. Duke, as president of the Southern Power Company, has long been interested in the development of water power on a large scale. He described the locations on Lake St. John and the Saguenay as ideal sites for manufacturing, pointing out that the river is navigable to a point only four miles below the place where a second plant is to be constructed. Mr. Duke declared that he thought it will be found possible to transmit surplus power to parts of the New England States at rates lower than are being quoted there now. He expressed the hope that he would live long enough to see the entire enterprise completed. "It will be regarded as one of the Seven Wonders of the World," he observed in concluding his interview.

BIG MACHINE FOR DONNACONA

Mr. R. P. Kernan, general manager of the Donnacona Paper Company, Limited, Quebec, who was in Montreal last week, states that the company have ordered a 234 in. newsprint machine from Charles Walmsley and Company, Limited, Bury, England, who have now on order several machines for Canada. The machine for the Donnacona Company will have a capacity of 75 to 100 tons per day. Installation will be commenced in March and completed early in January 1924.

The Donnacona Company are also installing four motor driven new grinders. With these additions the company will be in a position to produce, daily, 200 tons 8 ground wood. The company have already sufficient sulphite production to take care of the output of the new paper machine, and the additional groundwood equipment will therefore balance the plant, which is even now of a high order.

The Company are practically assured of a market for the output of the new machine. The operation of this, in conjunction with other assured newsprint developments will make Canada, in the early part of 1924, a larger producer of newsprint than the United States.

EXPORTS OF PULP AND PAPER NOVEMBER 1922

A special report from the Canadian Pulp and Paper Association gives details of the exports of pulp and paper were valued at $11,425,998 which was an increase of $1,020,565 over the previous month and of $1,984,148 over November 1921.

Details for November 1921 and 1922 were as follows:

	November 1921		November 1922	
	Cwts	Value	Cwts	Value
PAPER:				
Newsprint	1,341,098	$5,339,358	1,890,633	$6,733,078
Book Paper	66	719	2,399	16,778
Other Paper & Mnfg	......	393,881	......	480,930
		$5,733,958		$7,230,786
PULP:				
Sulphate (Kraft)	289,642	$ 854,298	290,911	$ 917,560
Sulphite Blchd	160,806	649,255	253,713	1,074,864
Sulphite Unblchd.	394,492	1,138,639	527,962	1,205,781
Mechanical	712,196	1,065,700	629,215	997,007
	1,557,136	$3,707,892	1,731,801	$4,195,212

The principal countries of destination of these exports were:

	Paper	Pulp	Total
United States	$6,260,236	$3,451,496	$9,711,732
United Kingdom	534,165	486,442	1,020,607
Other Countries	436,385	257,274	693,659
	$7,230,786	$4,195,212	$11,425,998

Pulp wood exports for the month were 64,652 cords valued at $650,974 compared with 49,476 cords valued at $614,974 exported in November 1921.

For the first eight months of the current fiscal year our exports striking increases over the corresponding eight months of last year. The details are given below:

	8 Months 1921		8 Months 1922	
	Cwts	Value	Cwts	Value
PAPER:				
Newsprint	9,012,612	$42,127,725	12,807,661	$45,435,172
Book Paper	14,739	177,455	28,729	203,082
Other Paper & Mnfgs.	....	2,675,005	....	4,128,169
		$44,980,185		$49,766,423
PULP:				
Sulphate	1,423,524	4,959,144	2,030,555	$ 6,249,331
Sulphite Blchd	931513	4,316,251	2,148,362	8,268,673
Sulphite Unblch	1,743,422	6,088,844	3,121,843	7,602,441
Mechanical	3,358,800	7,235,318	4,378,227	6,184,436
	7,457,259	$23,599,557	11,678,987	$28,304,881

From these figures it will be seen that for this eight months' period our newsprint exports have increased by 3,800,000 cwts., exports of book paper have almost doubled and other exports of paper have increased considerably. Our exports of pulp have increased by more than 50 per cent. the increase being specially notable in sulphite pulp.

Exports of pulp wood for the eight months to November 30th amounted to 664,067 cords valued at $6,873,809 compared with exports in 1921 of 518,067 cords valued at $6,749,433.

No man has a right to do as he pleases except when he pleases to do right.

Technical Section

REVIEW OF RECENT LITERATURE

A. — Properties, Chemistry and Testing of Raw Materials and Finished Products.

A-1 Cellulose Content and Pulp Yields of Some Australian Woods. L. R. BENJAMIN and JOHN L. SOMERVILLE. **Chem. Eng. Mining Rev.** xiv, 377-379 (1922); **Chem. Abs.** xvi, 4062 (Nov. 20, 1922). The following figures give the yield of cellulose (bone dry basis), and the maximum and minimum yields of unbleached soda pulp from Australian woods: Candlenut **(Aleurites moluccana)**, 62, 57.2, 54.4%; crows's foot elm **(Tarrieta argyrodendron)**, 54, 50.4-; swamp cypress **(Callistris Glauca)**, 43.2, 45.1, 41.3; Blackbutt **(Eucalyptus pilularis)**, 50.7, 52.7, 49.2; mountain ash **(Eucalyptus regnana)**, mature 57.2, 53.2, 48.4; immature 53.8, 52.1, 48.4; karri **(ucalyptus diversicolor)**, immature 55.7, 52.3, 48.4; silvertop **(Eucalyptus siberiana)**, 50.6 46.2, 45; woollybutt **(Eucalyptus delegatensis)**, 55.9, 52, 51.2; stringy-bark **(Eucalyptus obliqua)** 54.9, -, -; karri (mill waste), 57.5, 47.7, 46. A 2 to 3% loss of weights occurs during the bleaching process. These woods compare favorably with representative pulp woods of North America as regards cellulose contents and yields of pulp.-A.P.-C.

A-3 Utilization of Maize Flowers, Stalks, and Leaves. JOSEPH BURTT-DAVY. **S. African J. Ind.** v, 357-364 (1922); **Chem. Abs.**, xvi, 4063 (Nov. 20, 1922). A review of research work and of patents, The inside of the maize stalk furnishes a nearly pure "natural" cellulose. It is used in the manufacture of celluloid, paper pulp, a floor covering similar to linoleum, viscose nitrates, insulation for refrigerator trucks, steam pipe and boiler coverings, and for dry cells for electric storage batteries. Maize paper is remarkably tough and devoid of siliceous matter and undesirable brittleness. It is particularly suitable for bank-note paper and for envelopes. Coarser husks are used for the manufacture of wrapping paper. The residue from maize straw is made into fodder and ethyl alcohol is obtained from the waste liquors of mills using the sulphite process.-A.P.-C.

A-4 E-5 Mitscherlich Pulp. JOHN E. DALEY. **Pulp and Paper** xx, 1001 (Nov. 16, 1922). Brief description of the process of manufacture of Mitscherlich pulp showing its superiority over quick cook sulphite and the reasons for this superiority.-A.P.-C.

A-6 Wood Fuel. L. B. SCHIBBYE and S. SCHOLDSTROM. **vensk Pappers Tidning** xxv, 159-160 (1922); **Chems. Abs.**, xvi, 4043 (Nove. 20, 1922). Results of investigations to find more economical burning conditons for wood fuel are shown in 12 graphs. The highest temperature obtainable by burning wood with 70% of water and with 12% CO_2 in the flue gas was 775°C. Lowering the temperature of the flue gas from 300° to 130°C. in small saw mills saves 18.3% fuel. One cubic meter of wood weighing 271.3 kilos (55% of water) was found to be 26.4% more profitable than 1 cubic meter weighing 324 kilos and having 65 % of water. A saw mill using waste wood having 70% water and yielding flue gas at 300° and 10% CO_2 saved 16.5% by raising the CO_2 content of the flue gas to 14%.-A.P.-C.

A-11 Loading and Filling Materials. CARL C. SCHNEIDER, knowlton Bros. **Paper Mill** xlv, No. 45, 18, 46 (Nov. 18, 1922); **Paper Ind.** iv, 1259-1261 (Dec. 1922). Brief description of the use of fillers and of their properties, more particularly those of clay.-A.P.-C.

A-15 Reactions of Cellulose with Sodium Chloride and Other Neutral Salts. I Preliminary Survey. HELEN MASTERS. **Chem. Soc. Trans.** cxxi, 2026-2034 (Oct. 1922). When thoroughly washed cellulose was washed with sodium chloride solution,, it was found that the washing contained a very small but definite amount of acid. After washing with salt till no more acid was formed, by washing with water an amount of alkali was extracted which was practically equivalent to the acid extracted by the salt. These alternate extractions of acid and alkali could be continued practically indefinetly. Temperature apparently has no effect on the amount obtained. Extracting the cellulose with decinormal ssolutions of ammonium chloride, sodium sulphate, barium chloride, and calcium chloride gave similar results, but varying amounts of acid and alkali acid and alkali could be continued practically indefacid. After washing with salt till no more acid was for were obtained.-A.P.-C.

A-0 M-12 Uses of the Microscope in Paper Mills. JAMES STRACHAN. **Paper** xxxi, No. 3, 7-10 (Nov. 8, 1922). An outline of the various purposes for which the microscope can be used in the paper mill.-A.P.-C.

B. — Forestry

B-6 Use of Aircraft in Forest Operations. H. S. QUIGLEY, Price Bros. & Co. **Pulp and Paper** xx, 1017-1019, (Nov. 23, 1922). Brief outline of the method of making aerial surveys of timberlands, and of the usefulness and reliability of aircraft for this purpose. -A.P.-C.

B-9 Pulp Possibilities on the Pacific Coast. A. W. SCHORGER, C. F. Burgess Laboratories. **Pulp and Paper** xx, 1045-1047 (Nov. 22, 1922). A brief outline of the characteristics of groundwood, of sulphite and of sulphate pulps prepared from the relief western woods, and of the possibilitiies of utilizing by-products (galactan from western larch, by-products of lumbering, redwood waste).-A.P.-C.

D. — Groundwood Manufacturing and Equipment

D-5 Modern Practice in the Manufacture and Applications of Steamed Groundwood. A. O. BRAGG. **Chem. Met. Eng.** xxvii, No. 16, 793-797, No. 17, 842-846 (Oct. 18 and 25, 1922). A description of the present status and practical possibilities of the process discussing the theory and describing the equipment used. The operation of a modern American mill is discussed. -A.P.-C.

E. — Acid Process of Pulp Manufacture and Equipment

E-2 R-6 Pollution of Streams by Pulp Mill Wastes. GEO. C. WHIPPLE. **Proc. Am. Soc. Civil Eng.** xlviii, 1385-1392 (1922); **Chem. Abs.** xvi, 3991 (Nov. 20, 1922). The peculiar character of sulphite waste liquor is its sulphur content, acidity and high organic content. Among the effects produced by discharging this waste into rivers is to make the stream unsightly by reason of deposits of pulp and fungi and algae frowths, the tendency to drive away the fish, injuring the water for boiler feed, while the lignosulphonic matter interferes with coagulation, reducing the efficiency and increasing the cost of filtration. Uniform policy regarding stream pollution is needed.-A.P.-C.

E-2 F-2 K-2 R-6 Wastes from Pulp and Paper Mills Chemically Considered. H. W. CLARK. **Proc. Am. Soc. Civil Eng.** xlviii, 1393-1396(1922); **Chem. Abs.** xvi, 3991 (Nov. 20, 1922). Analyses are given for typical waste liquors from soda and sulphite mills. Neither of these liquors can be satisfactorily treated by any known method of purification other than evaporation and recovery of substances of value. They are exceedingly inimical to bacterial life and if mixed with sewage or other liquors and passed to filters they destroy the value of such filters. Much of the organic pollution in paper mill wastes is in suspension and may be recovered by pasing through fine wire screens or by sedimentation. Ninety % to practically all the matter in suspension can be removed if 75 to 100 grains of aluminium sulphate per gallon are used. This means from 10,000 to 14,000 lb. per million gallon of waste. Combination of screening, sedimentation and filtration will remove 70% or more of the primary pollution matters of paper mill wastes.-A.P.-C.

E-2 Fertilizer from Sulphite Waste Liquor. ZELLSTOFFABRIK WALDHOF. Eng. patent 179, 151, April 1, 1922. A fertilizer is obtained by causing a reaction of sulphite waste liquor with matter adapted to combine with the water of the liquor. Quicklime or a mixture of quicklime and magnesia is suitable. Hot concentrated liquor is preferably used and peat dust may be added to the mixture. The product is ground for use and fertilizing agents such as phosphates or potash salts may be added either before or during grinding.-A.P.-C.

E-4 Sulphur Burner. A. G. HINZKE. Can patent 218, 359, May 9 1922. Same as U. S. A. patent 1,140,061, March 21, 1922. See this journal, xx 889, Oct. 12, 1922.

F. — Alkaline Processes of Pulp Manufacture and Equipment

F-4 Liquor Evaporators for Sulphate Plants. O. OLSSON. **Svensk Pappers Tidning** xxv, 29 (1922); **Chem. Abs.** xvi, (Nov. 20, 1922). Modern plants use 25% less fuel than the older types. With the proper use of waste heat a Kestner apparatus should have an efficiency of 85 to 90%. Coupling pulp mills with saw mills eliminates the expense of preparing chips.-A.P.-C.

F-0 Use of Chlorine in the Manufacture of Paper Pulp. C. ARDISSON DE PERDIGUIER. **Papeterie** xliv, 866-873 (Oct. 10, 1922). Polemical against POMILIO. (See this journal xx, 840, Sept. 28, 1922.) The author claims that, owing to the high consumption of chlorine, the Cataldi process is of no interest outside of Italy where there is a good market for caustic soda with little or no outlet for chlorine; and that the pulp produced by this process is not of a quality suitable for the manufacture of fine papers.-A.P.-C.

F-0 H-5 Manufacture of Bleached Cellulose. World's Paper Trade Rev.; Paper Mill, xlv, No. 42, 48 (Oct. 28, 1922). Brief outline of the DeVains process.-A.P.-C.

G. — Pulp Treatment and Drying — Operation and Equipment

G-11 K-13 Save-Alls. A. W. NASON. Green Bay Foundry & Machinery Co. **Paper Mill** xlv, No. 45, 16, 42 (Nov. 18, 1922); **Paper Ind.** iv, 1261-1267 (Dec. 1922); The function of save-alls is twofold: to recover stock which would otherwise be lost, and to detect leaks which would otherwise pass unobserved. The various types of save-alls, and more particularly those marketed by the Green Bay Co., are briefly described. The importance of not unduly overloading save-alls and of not recovering usless and harmful material (dirt, etc.), is emphasized.-A.P.-C.

G-6 K-11 Operation of Flat Diaphragm Screens. HARRY WILLIAMSON. **Paper Ind.** iv, 1071-1074 (Nov. 1922). A description of the proper operation and cleaning of diaphragm screens.-A.P.-C.

H. — Bleaching, Bleach Manufacturing and Equipment

H-1 Determination of Available Chlorine in Chlorine Bleaching Compounds. F. DIENERT and F. WANDENBULCKE. **Ann. Fals.** xv, 338-339 (Sept. — Oct. 1922). Dilute 1 cc. of the bleaching solution to 1 liter, add 2 g. of ammonium sulphate, shake, and add a few crystals of potassium iodide and some starch solution. Titrate the liberated iodine with an alkaline arsenic solution, 1 cc. of which is equivalent to 1 mg. of available chlorine. The ammonium sulphate prevents the formation of iodate. The method was compared with those of Penot, Poncius, and Gay-Lussac, and all of them gave about the same results, Poncius' method always giving slightly higher results than the others. Especially with low chlorine contents, Poncius' method gives high results, depending on the rate of addition of the potassium iodide solution, because the reaction between potassium iodide and potassium iodate does not take place immediately. Penot's method is not suitable for very dilute solutions.-A.P.-C.

H-5 Method of Bleaching Pulp. GEO. M. TROSTEL. Can. patent 224,290, Oct. 3, 1922. The pulp is collected on a vacuum filter to bring it to a high consitency and is then saturated with bleach liquor at 170 to 180° F., the consitency at this stage being as high as 18 to 20%. Bleaching is usually complete in about 7 and 15 min. The excess of bleach is removed by vacuum and air is drawn through the pulp to facilitate the oxidizing action. The bleaching may be carried out either in one or two stages.-A.P.-C.

K. — Paper Manufacturing and Equipment

K-1 K-10 Rosin Size Control. P. W. CODWISE, Byron Weston Co. **Paper** xxx, No. 23, 7-9 (Aug. 9, 1922). The method consists essentially in titrating 50 cc.of diluted rosin size milk (not over 5% concentration) in 200 cc. of water, at the boiling temperature, with decinormal sodium hydroxide. A 0.5% solution of thymolphalein in 50% alcohol is used as an outside indicator. The end point is reached when it turns slightly blue. The indicator should be tested frequently for sensitiveness, and be made up fresh at least monthly. The titration should be carried out on a solution of a concentration of 1% or less. The method is recommended chiefly for control purposes. It is believed that it will be of especial value when dealing with rosin size solutions containing considerable unsaponified rosin and that in such cases it may be used to advantage as a supplement to a previously published

(Continued on page 2050)

BRITISH PULP MEN MEET

(From our London correspondent)

London, December, 9 1922. — The 26th annual meeting of the British Wood Pulp Association, recently held in London, was a tame and extremely formal gathering. Years ago it was one of the greatest fixtures of the year and was followed by one of the most enjoyable social function's of the year; but in these days of economy and high pulp prices there is a disposition to reduce ''pulp talk'' to the smallest minimum and live in hope for the future. Here we have a body of men handling thousands of tons of mechanical and chemical pulps in the year for the British mills, who can only tell us that they ''are meeting in a better spirit'' than they did last year and that the historical and much discussed Contract Note, which has caused nations to argue its composition and objects, will be made known shortly. Worse still, there has been during the past year about $4.50 spent over the income — the income was £213 7s. 1d. and the excess of expenditure over income was 17s. 4d. — but there is a little nest egg of £100 invested in war bonds at 5 p.c. to fall back upon. There is no doubt the Association wants a little gingering. It is full of wealthy merchants and agents, and the poor struggling papermakers would liked to have known how the pulp (since we are told that ''pulp'' is a colloquial term for mechanical, as opposed to sulphite, in the ''Dictionary of Paper Terms,'' pulp in this instance includes Sulphite men, because they are more rich), men fared at their expense during the past twelve months. The pulp men only say that they were facing a more hopeful situation and the past year was not gone through without difficulty. But when the papermaker turns to the official imports from Scandinavia the figures illustrate a different story, which will be fully published in the ''Pulp and Paper Magazine'' when the 12 months returns are available early in January next.

The Annual Report

During the past year the Association held seven committee meetings. Three members resigned and ten new members were appointed, while a grievous loss was sustained by the death of Mr. J. A. Nordberg, a highly respected member.

Concerning the Contract Note, it is stated that since last year's report definite progress has been made. After prolonged negotiations a conference, at which representatives from Sweden, Norway, and Finland, as well as from the Papermakers' Association in England, were present with members of the British Wood Pulp Association was held in London in October under the chairmanship of Mr. S. Nicol. A tentative agreement was reached subject to the confirmation of the other Associations concerned, and the resulting Contract Note will, it is hoped, be made known very shortly. It was also decided not to hold an Association dinner this year.

The Association was approached by the Scandinavian associations in reference to a suggested new form of Wood Pulp Charter Party, which was carefully considered by a sub-committee consisting of Mr. Rustad and Mr. Leander, with the assistance of Mr. Palmer. Various amendments were proposed and the suggested form has been returned to the Scandinavian associations.

During the past year there has been less difficulty in obtaining business than the previous year. The majority of old contracts have been arranged as between buyer and seller. The committee men had before them many questions for consideration and sub-committees were appointed to deal with them in some cases, but no detail reference to them is possible.

There is the report of the Association with a few statistics thrown in on imports.

Election of Officers

Mr. L. P. Andrews, one of the doyens of the pulp trade, has been re-elected President of the Association; Mr. Eric Nordberg, hon.-secty; Mr. G. Westling, hon.-treasurer; and Mr. G. W. Andrews and Mr. W. M. Greenhalgh, hon.-auditors. The committee was elected as follows: Messrs. S. Nicol, N. Leander, C. Greenhalgh, W. H. Palmer, R. Dickson, L. E. Rustad, E. C. Laitt, W. J. Mather, Mr. Diesen and Mr. Purkiss.

Mr. Nicol explained that out of respect for the feelings of the Papermakers' Association not much publicity was given to the conference on the Contract Note, but when the time became ripe no delay would be caused in acquainting the members of the Association with the final results agreed upon.

Canadians will thus see this is one of the ways the Contract Note is handled in solemn conclave. Everybody wants to be pleased and judging by Mr. Nicol's statement it looks as if the Contract Note will be held up for a new year's card of greeting. The Great War, of course, is blamed for everything.

Business in Pulps

There is a feeling of confidence in the pulp market for the near future and prices are firm. Good supplies have recently arrived from Canada.

According to Scandinavian sources some of the British paper mills have bought Easy-bleaching at £15 a ton for delivery next year and strong sulphite at £14 and £14 10s. a ton. These are the prices ruling in London today with a tendency to harden. Bleached sulphite (No. 1) is quoted at £24 a ton which is a considerable jump within the last few weeks. Mechanical pulp is unchanged and the same may be said of sulphate.

During the past month considerable attention has been given to 1923 contracts and it is reported that the amount of business carried through has been on satisfactory basis for sellers of pulp.

Canadians in London

Mr. David Forrest, managing director of the Red River Paper Mills, Ltd., is in London this week in connection with the development of his firm. The capital of the company is $250,000 divided into 4,800, 8 p.c. cumulative preferred participating shares and 5200 ordinary shares of $25 each. It is in connection with the preference shares being placed on the market through the Union Bank of Canada at £5 11s. 3d. per $25 share that has Mr. Forrest in London, while the ordinary shares are all bought up. The company will produce wrapping and building papers, corrugated board, cardboard, etc., and the Port Arthur Shipbuilding Co. are equipping 1 mill. So far Mr. Forrest is meeting with success. He deserves all the encouragement he can get with British capital.

Mr. Harry Kay, of Price Bros., is also at present in London having a run round amongst his pulp and paper friends.

Where the Newsprint Goes!

Over 2,000 tons of newsprint made at Peter Dixon and Son's Grimsby mills was shipped in November to Australia by one firm. Who says the Australian preference for British newsprint is not doing some good? Here is one instance.

UNITED STATES NOTES

A material improvement in business is reported by various divisions of the National Association of Waste Material Dealers which held meetings last week at the Hotel Astor, New York City. President Overton's report to the Association announced the completion of arrangements with certain firms of European waste material dealers who ship to the United States for the settlement by arbitration of any differences that may arise at any time in connection with such shipments. This arrangement was largely effected through Mr. Overton's own efforts. He recently returned from a trip to Europe which he made specially for the purpose of seeking methods of bringing about a closer co-operation between American dealers and concerns abroad. The waste paper, paper stock and foreign trade divisions of the Association held a combined meeting. The discussions at this session proved the most important of the conference. Matters of considerable interest to the trade were considered, including the position on the moisture question taken by the Felt Manufacturers' Association, which has been in conference with a committee from the Writing Paper Manufacturers' Association. The regular quarterly luncheon of the Association closed the meetings.

The present wage scale and 44-hour week of the 6,000 printers in the book and job printing industry in New York City is continued until October, 1923, under a decision handed last Thursday by Judge Talley, acting as arbitrator between the Printers' League, The New York Employing Printers' Association and Typographical Union 6. Judge Talley held that changes in living conditions did not justify the contentions of either side to the controversy. The union had demanded a $5 a week increase, while the employers insisted on a $10 a week wage reduction.

William B. Greeley, Chief Forester, in the annual report of the Forest Service of the Department of Agriculture, says that if Canada's pulp wood restrictions, which is as present operating as a handicap upon paper mills in the United States, is extended to exports from all forest lands in the Dominion, as is likely, raw wood from Canada will be completely shut off as a source of supply for the paper industry in the United States. Two thirds of the requirements of paper mills in the States are now drawn from Canada, and Northeastern mills have already been seriously affected by the present regulations which prohibit pulp wood exports from crown lands. This illustrates, the report points out, the hazard of becoming dependent upon foreign supplies.

The Framingham, Mass., mansion of Henry S. Dennison, president of the Dennison Manufacturing Company, was burned December 23rd, causing a loss estimated at $75,000. Mr. Dennison, at the time the fire broke out, was away in Washington in connection with his duties as a welfare director in the Post Office Department. Members of his family had no difficulty in leaving the house afte the fire was discovered.

In a special article, prepared for the New York "Herald" for its Sunday issue of December 24, Dr. Louis E. Wise, Professor of Forest Chemistry, the New York State College of Forestry at Syracuse University, tells of the valuable contributions to industry made in the last few decades by applied chemistry, particularly in the forest products field. The article sketches the progress and strides made in paper production since paper manufacturing was revolutionized by the utilization of wood pulp as a raw material. Speaking of the sulphite pulp industry, Dr. Wise points out that it furnishes material not only for the production of news and bond papers but also for the manufacture of artificial silk. "The forest chemist," he writes, "has become the silk worm's competitor. He has not actually synthetized real silk, which is a protein substance, but he has made a strong lustrous artificial fibre of wood cellulose, resembling silk in many of its properties and daily becoming more and more important in the world's textile industries." Touching on the beginnings of the "Sulphite" pulp industry, Dr. Wise writes: "In 1874 the crape hangers of the paper industry gave vent to the following bit of optimism: 'Great endeavors have been made to introduce wood pulp as a fiber, but practical paper makers deem it a failure.' Let us hope that these pessimists were still alive in the lean year of 1921, when American pulp mills were at low ebb and this country produced over a quarter million tons of "soda" pulp and well over a million tons of sulphite pulp." However much progress may be chalked up in other directions, Dr. Wise admits that the economic problem of eliminating the collosal waste due to discharge into streams of ill-smelling waste liquors, which is incidental to the manufacture of chemical pulp, not only remains a serious problem, but one that is still crying for a solution.

At a recent meeting of directors of the United States Envelope Company, James Logan, first vice-president of the company was elected president. Mr. Logan, a former Mayor of Worcester, Mass., has been general manager of the envelope company for the last 24 years. He was elected to fill the vacancy caused by the death recently of C. Henry Hutchins of Worcester.

The new mill of the Charleston Paper Manufacturing Company at Nitro, W. Va., it is reported, will be opened for operations early next month.

The Weir Brothers Paper Company, mill agents and jobbers of paper at Chicago, announce that J. P. Tyrell has become associated with the firm as treasurer and manager. Mr. Tyrell until recently was with the Gaw-O'Hara Envelope Company. He was formerly connected with the United States Paper Corporation and the International Paper Company.

M. C. Dobrow, statistician of the Writing, Book, Cover and Tissue Paper Manufacturers Association, has resigned to become treasurer of Irving, Miller & Co., importers of general merchandise at 78 Fifth Avenue, New York. The resignation takes from the paper industry a man who in seven and a half years of work in the manufacturing associations has become favorably known to every manufacturer of fine papers, through his having risen through every department of the office of the fine paper associations. This experience has given him a knowledge of conditions possessed by few men in the paper industry. Mr. Dobrow's resignation will take effect January 1, when he takes up his new activities.

control method which estimated the alkaline properties of the size. (Compare CODWISE, **Paper** xxiv, No. 22, Aug. 6, 1919; Also, **Pulp and Paper** xviii, 728, July 8, 1920; xix, 885, Aug. 25, 1921).-A.P.-C.

K-4 K-7 K-23 Rubber Latex in Paper Making. FREDERICK KAYE. **India Rubber J.** lxiv, 435-442 (1922); **Chem. Abs.** xvi, 4062 (Nov. 20, 1922). In making latex paper it is essential that the latex be thoroughly diluted with water before being added to the beaten pulp, and it is best added towards the end of the heating process. With low percentages of latex, coagulation occurs spontaneously, but with higher percentages it can be effected by magnesium sulphate, acetic acid, or best of all with alum. It is important with alkaline pulps to have an acid reaction at the end to prevent loss of rubber in the water. This is emphasized by experiments where an amount of latex calculated to give 2% of rubber in the dried paper showed by analysis only 1.7%, whereas with the same fiber and latex calculated to give 4%, analysis showed 4.07%. Latex in very small amount accelerates the rate of cellulose hydration and the time for a stock to reach definite strength and quality can thus be shortened. For a paper of a certain finish, the fibers are closer and more uniform in texture with latex than without. Paper given the same beating times has been increased in strength by over 1000 g. per square m. and in breaking length by 1000 m. through the addition of 0.5 to 1% of rubber. Vulcanization of latex paper containing 5 to 30% by the Peachey process further increases the strength and makes a stiffer paper. Many weeks' exposure to sun and rain did not cause deterioration of any latex paper. The use of latex is particularly recommended for, (1) increasing the elasticity of a paper lacking this property but of high strength, (2) adding strength to weak paper made largely of waste and (3) increasing the folding endurance of any grade. Every grade can be improved in some property. The finest cotton and linen papers have been made with latex. Waterproof latex paper is suggested for packing food and for protecting young shoots on sugar plantations. Board, leather substitutes, linoleum, etc., can be made and dyed. So far the best results in dyeing materials containing latex have been with basic colors. 3 to 3.5 gallons of commercial ammonia per 100 gallons of original latex is a safe amount for complete preservation. (Compare **Pulp and Paper** xx, 699, Aug. 17, 1922.)-A.P.-C.

K-4 Removing Coloring Matter from Paper Stock. E. ANGIER. Can patents 224, 551, 224, 552, Oct. 10, 1922. **No. 224, 551.** The thoroughly pulped stock is treated, in the proportion of 160 lb. per ton of stock, with a mixture of one-third sodium carbonate (sal soda, $Na_2CO_3 10H_2O$) and two-thirds sodium carbonate monohydrate ($Na_2CO_3H_2O$) at 130°F. for 20 min. **No. 224,552.** The pulped stock is treated, in the proportion of 160 lb. per ton of stock, with a mixture of approximately equal parts of sodium sesquicarbonate ($Na_4H_2(CO_3)_3.3H_2O$), sodium carbonate (sal soda, $Na_2CO_3.10H_2O$), and sodium carbonate monohydrate ($Na_2CO_3H_2O$), at 130° F. for 20 min. Slaked lime, borax, and calcium acid sulphide can be used as substitutes.-A.P.-C.

L. — Articles Produced from Pulp and Paper

L-4 Blank for Making Conical Papers Cups. D. F. CURTIN. Can. patent 224, 742, Oct. 10, 1922. Reissue of Can. patent 177, 102 of May 15, 1917.-A.P.-C.

L-5 Cutting Condensite Celoron Gears and Pinions. Pulp and Paper xx, 976 (Nov. 9, 1922). A description of the properties of "Condensite Celoron" made by the Diamond State Fiber Co. of Canada Ltd.-A.P.-C.

L-5 Preparation of Vulcanized Fiber. J. A. SUTCLIFFE. Eng. patent 183-197, Jan. 27, 1921. Vulcanized fiber, prepared by the zinc cloride process, shows a tendency to absorb moisture owing to the presence of zinc chloride residues. This defect is remedied, and a product obtained more suitable for use in the manufacture of machinery parts, insulators etc., by saturating the material immediately after the "washing off" process, or even after it has been dried, with strong ammonia solution. When completely saturated, the material is removed from the bath, washed, and dried. -A.P.-C.

L-5 A-15 Manufacture of Cellulose Compounds (Esters, Ethers, Etc.). PAULSON'S LTD. Eng. patent 183, 908, April 28, 1921. Cellulose derivatives are made by treating cellulose, in a highly dispressed condition, with the desired reaction components, with or without condensing agents. The cellulose is dispersed by intensive mechanical disintegration at high speeds until the particles are about 0.0008 mm. in diameter, e. g., in the colloid mill (Eng. patent 179,124. Compare FRYDLENDER, this journal xix, 908, Sept. 1, 1921). Examples are given showing how to prepare the phosphoric ester, acetate, sulphide, and methyl ethers.-A.-P.-C.

L-7 Producing Yarn from Paper Pulp. F. P. PRIEM **assignor to** TURK GESELLSCHAFT. Can. patent 224, 538, Oct. 3, 1922. The rubbing or rounding of the rovings is carried out separately from the roving producing machine shortly before they are spun.-A.P.-C.

M. — General Equipment

M-4 Paper Mill Transmission Machinery. G. N. VANDERHOEF. **Paper** xxxi, No. 1, 7-12, No. 2, 12-14 (Sept. 6 and 13, 1922), No. 3., 33, (Nov. 8, 1922). A discussion of shaftings, bearings, couplings, pulleys and ropes drives, showing the proper function of each and the most suitable types under various conditions.-A.P.-C.

M-7 Economics of Lighting in Pulp and Paper Mills. J. H. KURLANDER, Edison Lamp Works. **Paper Trade J.** lxxv, No. 21, 20-26 (Nov. 23, 1922); **Paper Mill** xlv, No. 46, 20, 44, 46 (Nov. 25, 1922). The author discusses the advantages of sufficient and well designed lighting in increasing efficiency and production, showing that the added expense is greatly exceeded by the increase in production. He gives figures showing that a 110 volt circuit is more economical for lighting purposes than a 220 volt circuit.-A.P.-C.

M-11 Lubrication of Paper Mills T. C. PORTEUS. **Paper Ind.** lv, 924-926 (Oct. 1922). A brief discussion showing the merits of lubricating greases for paper mill machinery.-A.P.-C.

M-11 Present Position of the Theory of Lubrication. GUMBEL. **Forschungsarb. Geb. Ingenieurw.** No. 224, 3-27 (1920); **Chem. Abs.** xvi, 3518 (Oct. 20, 1922). The author characterizes the conditions of dry, liquid, and semi-liquid friction. The influence of temperature on the viscosity of lubricants is presented by the equation $1/n = (1/n)\ \text{min} + K(\theta - \theta\ \text{min})^2$, where **n** is the viscosity and the temperature, θ min being the temperature at which the fluidity **(1/n)** is a minimum. Engler's and Hofer's experiments show that **K** is greater the lower the viscosity of the oil. Olive oil would be the best lubricant and water entirely unsuitable as such. A new apparatus is proposed for the measurement of fluidity, the outlet opening being a capillary slit. The Von Dallwitz-Wegener theory, whereby the minimum quantity of lubricant required is dependent on the surface tension and the angle of contact between the lubricated surface and the lubricant is criticised and capillary forces are considered to be without influence on the friction between properly lubricated surfaces of machine parts.-A.P.-C.

M-12 A New Carbon Dioxide Recorder. Electrician lxxxix, 15 (1922); **Chem. Abs.** xvi, 3415 (Oct. 20, 1922). This CO_2 recorder is electric in operation, requires no chemical absorbent, has no delicate glass work, and is claimed to be very active and sensitive. The meter contains two identical spirals of platinum wire enclosed in separate cells in a metal block. One cell contains air saturated with water vapor and the other is open to the flue gases. The platinum spirals form two arms of a Wheatstone bridge circuit. When the current flows the spirals become heated, losing heat to the walls of the cells, their temperatures and resistances depending on the thermal conductivities of the gases surrounding them. CO_2 changes in the gas cause changes in its conductivity and a consequent change in the galvanometer needle deflection. The indicating or recording galvanometer can be calibrated to give direct readings in% of CO_2. A portable CO_2 and temperature outfit is illustrated and briefly described. It is enclosed with the recorder. Current is supplied by dry cells fitted into the lid of the case When CO_2 readings are desired the flue gases are drawn past the CO_2 water pressing a rubber bulb and the multiway switch is turned to the CO_2 position. For temperature readings a thermocouple is placed in the flue and connected by the two terminals, and the switch is turned to the position marked "couple". Each apparatus is illustrated.-A P.-C.

R. — General

R-6 First Progress Report of the T. A. P. P. I. Committee on Waste. R. B. WOLF. **Paper Trade J.** lxxv, No. 14, 45-49 (Oct. 5, 1922); **Paper Mill** xlv, No. 40, 18, 20, 42, 44, 46 (Oct. 14, 1922); **Paper Ind.** iv, 928c-928f (Oct. 1922). An outline is given of the tests which the committee plan to make on mill effluent (white water) and on bark pressing and utilization. A cost method which is in actual use at the Newton Falls Paper Co. to show broke losses in supercalendering, rewinding, cutting and finishing is given. A general outline is also given of the losses incurred in pulp and paper mills, on which all available data are being collected and coordinated for future study.-A.P.-C.

R-6 Technical Men Discuss Waste Prevention. W. G. MacNAUGHTON. **Paper Mill** xlv, No. 41, 52 (Oct. 21, 1922). Brief outline of the subjects discussed at the Detroit meeting of the T. A. P. P. I., Oct. 9 and 10 1922: loss in mill effluent, use of barking drum refuse, fuel used for drying.-A.P.-C.

R-11 The Future of Research in Paper Making. JOHN STEVENS, 3rd. **Pulp and Paper** xx, 901-903 (Oct. 19, 1922). A brief general outline of some of the more important lines of research which are open to the pulp and paper chemist: utilization of waste products, reduction, of power consumption, washing efficiency, vacuum drying, production of new fibers by the sulphate process utilization of Southern pine.-A.P.-C.

R-0 Scandinavian Competition in America. HUGH P. BAKER. **Pulp and Paper** xx, 897-900 (Oct. 19, 1922); **Paper Mill** xlv, No. 41, 28, 30, 68, 70 (Oct. 21, 1922). An outline of the conditions in the pulp and paper industry of Scandinavia, and more particularly of Sweden, showing that Scandinavian competition is going to be keener than before both in the American and in foreign markets.-A.P.-C.
***Paper Trade J.** lxxv, No. 17, 26-29, (Oct. 26, 1922); **Paper Ind.** iv, 1058-1062 (Nov. 1922). **Paper** xxxi, No. 3, 22, 24-25 (Nov. 8, 1922).

R-5 The Manufacture of Paper Pulp in France and in its Colonies. A .R. DEVAINS. **Papier** xxv, 337-347 (Aug. 1922). After briefly outlining the three classes of processes for the manufacture of pulp (sulphite, soda and sulphate, chlorine) the author discusses the French supplies of raw material and the suitability of the various processes from the standpoint of obtaining as far as possible a self-contained French industry, and concludes that the soda and chlorine processes are the most suitable. With regard to colonial resources, apart from esparto which can be economically transported from Northern Africa to France for manufacture into pulp, bamboo, papyrus, "ravenala", and rice straw can be economically worked in the colonies. The most suitable process is the chlorine process, as the consumptions of chlorine and soda can be made proportional to the amounts in which they are produced in the electrolysis of sodium chloride and consequently no soda recovery is required. The author concludes with a plea for lower transportation rates and higher tariff protection for chemical pulp.-A.P.-C.

R-6 The Treatment of Industrial Waste Waters. ANDRE BELTZER. **Industrie Chimique** ix, 95-100 (1922). A general description of the method of treatment of industrial waste waters, more particularly from sulphite and paper mills.-A.P.-C.

R-6 The Treatment and Disposal of Strawboard Wastes. H. B. HOMMON. **U. S. Public Health Bull.** No. 97, (1919); **Chem. Abs.** xvi, 2946 (Sept. 10, 1922). Experimental studies made on the disposal of strawboard wastes included treatment by sedimentation, filtration and the activated sludge process. The wastes were sedimented 2 to 4 hours. Chemical presipitants (lime, sulphate of aluminum, and ferrous sulphate) were added during certain periods of the tests. The settled wastes were filtered, screened cinders giving the best results. The activated sludge process was tested in connection with further treatment of the waste but the degree of added purification with aeration was in sufficient to warrant further study. The disposed of the sludge remains a problem; when partially dried it can possibly be used as a fertilizer.-A.P.-C.

R-9 The United States Tariff of 1922. Pulp and Paper xx, 825-831, (Sept. 28, 1922). Text of the portion of the tariff relating to the pulp and paper industry. -A.P.-C.

R-0 Co-Operative Competition and the Service Associations. T. J. BURKE. **Pulp and Paper** xx, 607-608 (July 20, 1922). A discussion of the necessity of close cooperation between the four service associations (Technical, Superintendents', Salemen's and Cost) affiliated with the American Paper and Pulp Association. -AP..-C.

R-0 Advantages of the American Decimal Standard System of Weights for Paper. F. E. STAPLEFORD. **Pulp and Paper** xx, 621-623 (July 27, 1922). A discussion of the merits of the American Decimal Standard and of the most practical method of introducing it into general use.-A.P.-C.

R-0 A Dictionary of Pulp and Paper Mill Terms. Pulp and Paper xx, 449-452, 471-474, 493-494, 519-520, 539-542, 559-561, 582c-582d, 605-606, 649-650 673-674, 697, 717-718, (June 1 to Aug. 24, 1922); **Paper Trade J.**, lxxiv, Nos. 22, 23, 24, 25, 26 (June 1 to 29, 1922); lxxv, Nos. 9, 10, 12, 13, (Aug. 31, Sept. 7, 21, 28, 1922).-A.P.-C.

The Markets

CANADIAN TRADE CONDITIONS

Montreal, December 26. — As was to be expected at this season, the local paper trade has been on the quiet side during the past week. There have been a few needs orders, for the holiday business, but the bulk of the buyers have been now concerned in disposing of the goods in stock than in ordering fresh supplies. Jobbers are not likely to be in the market for any large quantities until the stock-taking period is over.

Taking everything into consideration, the past year has been satisfactory for most branches of the pulp and paper trade. Business improved as the months went by, and although some paper jobbers state that the net profits have been small, yet the balance-sheets will present a more cheerful appearance than those for 1921. Some departments indeed experienced a distinct recovery. Prices of several lines have advanced, but against the higher values must be set increased cost of manufacturing. The paper mills have been well supplied with orders, and in the case of newsprint the mills have run at capacity for a considerable period. The pulp market has been in much better shape, with groundwood the leader so far as price is concerned. The value of mechanical pulp has indeed reached a point which represents substantial profits.

During the week there has been little alteration in the newsprint situation. The exports during November totalled 94,532 tons, an increase of 12,980 tons, or about 16 per cent. better than the October figures. The exports were the largest since March. The United States took 10,494 tons more than in October, the total being 85,712 tons. For the eleven months the exports were 874,008 tons as against 636,487 tons in 1921, an increase of 37 per cent. By far the greater portion of this gain was due to the demand for the United States; the United Kingdom was also a better customer, going from 287 tons to 13,820 tons; Australia took about 10,000 tons more; British South Africa was 1,200 tons to the good, while Argentina fell away by about 4,000 tons.

In nearly all other paper sections business has been fair, there being a natural showing up at this period. Some of the mills however, are still behind with deliveries. The wrapping trade is good, with the mills well booked up. In this connection, the exports of kraft wrapping paper show a distinct advance for the eleven months of 1922—17,061 tons as compared with 5,940 tons. The United Kingdom was the best customer, taking about 6,000 tons more; Australia, New Zealand, Japan, and the U. S. A. were also more active buyers—in fact, the U. S. A. did not purchase a ton during 1921, but in 1922 absorbed 1,550 tons.

Groundwood was the outstanding feature of the pulpwood market. Reports from many districts show that the streams are unusually low, and that production is being secured with difficulty. There are many inquiries for this pulp, and some lots have been sold at $55 per ton. In view of the almost certainty that water conditions will get worse, a further advance in values may be looked for. The exports during the eleven months were 280,268 tons, as against 185,954 tons in 1921. Bleached sulphite was dull, with an easier tendency, buyers being inclined to hold off until the turn of the year. The figures for the eleven months show exports of 138,445 tons, compared with 185,954 in the corresponding period of 1921; the U. S. A. took by far the greater portion of the higher exports. Unbleached sulphite was a slow market. The exports for the eleven months totalled 192,343 tons compared with 107,738 in 1921, the U. S. A., the United Kingdom and France buying larger quantities.

Toronto Market Notes

Although generally speaking there has been a lull in pulp and paper business circles in Ontario during the Christmas season several lines kept up to the usual selling standard and some distributing firms report little cessation in trade. Manufacturers of tissue, toilet and other light weight papers, and the jobbers in these lines, say that consumption in these lines has been well maintained and that the usual Christmas quiet did not strike them materially. There has, however, been a slackening off in the sales of bonds, books and writings amongst the distributors, although the mills turning out these lines continue busy and prospects for good business next year with them is good. The stationery trade is keeping up well and envelope manufacturers are busy, although one of the biggest envelope manufacturing firms in Toronto told the Canadian Pulp and Paper Magazine this week that 1922 did not produce more than fifty per cent normal business in that particular line. This may have been partially due to the protracted quiet period among many of the industrial concerns which had the effect of curtailing direct-mail advertising, the free use of office stationery and other features associated with the utilization of envelopes. It is generally believed in the envelope trade, however, that the loss in the present year's business will be overtaken in 1923 and that the coming year will be a good one. Quite a number of firms combine the manufacture of envelopes with that of paper boxes. The latter line has boomed during the latter half of the year and has helped materially to keep the board mills going. It is known that one big Toronto paper box factory is contemplating the establishment of a board mill in Ontario and that already enquiries have been made as to site and costs. While the scheme has not developed as yet it is understood that it will be the subject for discussion when the firm-holds its annual meeting in January. In the meantime the consumption of board by the paper box industry is increasing rapidly as the trade is originating and reaching out after new lines of cartons. A big development in the industry is the extent to which advertising and art work are displayed on the boxes, many of the retail firms in Toronto this Christmas using the elaborately designed boxes as a back ground for their window displays. The trade anticipates that next year will see a still greater development in the industry when many lines of merchandize not now put up in boxes will be on the market in nicely designed containers.

Prices in most standard lines of paper are firm and the upward trend is still indicated, although an odd line shows a decrease from time to time. The week saw a drop of ten per cent in index card boards but prices of other lines remain the same. Increase are looked for early in the year on coated paper and it is said there are other lines that are due for an early advance, with no decrease on any line in sight.

It is learned that one feature of this Christmas in the Ontario pulp and paper industry will be the absence of any bonuses to the workers. Quiet a number of the mills, during the hey-day of the pulp and paper boom made a practise of handing out substantial bonuses to their men but there has been a general survey among the manufacturers with the result that pay envelopes this Christmas will not be enlarged. The practise of bonus-giving was established when labor was expensive and hard to get. This condition has changed to some extent and the mounting costs of raw material, additional operating expenses and other outlay features have caused the pulp and paper manufacturers to retrench wherever they see an opportunity.

PULP. — While the market for most lines of pulp remains fairly strong, mills report that unbleached sulphite has fallen off somewhat, although the belief is general that the strong demand that has characterized the product during the last several months will be resumed at the first of the new year. Despite this slight falling off one of the big mills in Northern Ontario, the Mattagami, reports that they are running at full capacity and have orders ahead to the middle of January. Other mills are pretty much in the same position although there has been a general slackening in demand during the Christmas season owing largely to inventory taking. Some complaint is heard of a car shortage which is hampering pulp operations, many of the Canadian empties being held back by the U. S. roads. Most of the mills have been up against low water of late which has had the effect of cutting down production to a considerable extent. This has had its effect on the ground wood market which is on the increase. A few weeks ago ground wood pulp was being bought at $30 and $33 but as high as $42.50 is now being paid. Bleached sulphite is quoted at from $100 to $105 and unbleached at $65, with soda pulp at 4½ cents per lb.

RAG AND PAPER STOCKS. — All grades of paper are slow just now but not through any lack of business by the mills. Dealers say it is due to a desire to keep inventories down during the stock-taking period. There is a strong undertone to the market and dealers are not making any sacrifices to dispose of their stocks. No one is selling short. It is understood that paper mills have not more than eight or ten days supply of old paper stock on hand and that by the turn of the year buying will be in full swing again. The rag market is dull and very little is being bought. The following prices prevail:

No 1 hard white shavings, $3.75; No. 1 soft white shavings, $3.25; heavy books and magazines, $2.25; ledgers and writings, $2.50; No. 1 kraft, $2.50; newspapers, $1.15 No. 1 mixed papers, 80c; miscellaneous, 75c.

RAGS. — New cotton cuttings, No. 1 white shirt cuttings, 9½c to 10c; fancy shirt cuttings, 6c; canton flannels bleaches, 9½c; white lawns, 8½c; ble overall cuttings, 6c. No. 1 scrap bagging, $18.00; No. 1 manilla rope, 6c to 6¼c; mixed strings, $18.00.

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NEW YORK MARKETS

New York, December 23. — (Special Correspondence) — It is rather customary for demand for most kinds of paper to slow down during the final fortnight of the year, and developments in the market in New York this week have been no exception to this rule. Consumers have noticeably let up in their buying. The holiday spirit is in the air and there is a general relaxation in business, with the result that consumption of paper of many descriptions has decreased to some extent, which in turn has been followed by curtailed demand from consuming quarters. However, this conditions is one expected by the trade and therefore is the cause of little or no comment and practically no apprehension.

On the whole there is greater activity in the paper industry than is ordinarily the case at just this time of the year. The movement of newsprint continues just as large as ever, and there is a good steady demand for book papers and for wrappings and tissues. Of course most of this movement is against contracts, but the mere fact that paper is leaving producing plants and going to consumers and jobbers is enough to maintain the market tone and to well sustain quotations. There have been no important changes in prices. Some kinds of paper have eased off slightly, but the softening of prices has been very gradual and the reaction in values has been, to say the least, of narrow compass. In fact, sentiment in the trade is quite bullish regarding prices, a majority being of the belief that higher market levels will be reached soon after the turn of the year. It must be remembered that paper prices are not yet fully stabilized, that some kinds of paper have been selling at prices below a parity with raw material and manufacturing costs, and that this situation will not continue if demand keeps up in the volume reached during the past several months. No one is anticipating any sharp advances in prices, as a matter of fact no one in the trade wants to see a runaway market or anything approaching such a market condition, but it is freely believed that prices in some cases will be revised in an upward direction before the new year is very far advanced.

The movement of newsprint keeps up in record-breaking tonnage and publishers are reported to be constantly after mills to hurry along shipments. There is little doubt that consumers' stocks of print paper have been well eaten into during the past few weeks, and it is probably their desire to replenish their holdings to be prepared for any emergency that may arise. A careful observation of local newspapers has shown no decrease in consumption of newsprint this week. Publishers in New York have printed just as large issues during this week preceding Christmas as they have at anytime in the pre-holiday period, and there is not the question of a doubt that when statistics regarding the consumption of newsprint for the past five or six weeks are available it will be found that a new high record of print paper consumption for such a space of time has been established in the United States.

Newsprint prices remain firm notwithstanding that a week from next Monday the reduced contract basis becomes effective. Present indications are that this change in the contract price will go into effect without disturbing the market in the least. In fact, it would appear as if manufacturers could just as well have advanced the contract price a quarter of a cent per pound without upsetting the market at all. Reports regarding the tonnage publishers have contracted for during the new year are very bullish, telling as they do of commitments exceeding any orders in the past.

There is a good steady call for book paper though the market at the moment lacks feature. Most of the movement is to the large cousumers of book papers, retail demand having slumped to a pronounced degree. Prices are holding firm with coated book paper especially strong owing to the situation existing in the casein market. Wrapping papers have slowed down somewhat during the past few days, but it is stated that mills are well supplied with orders and that they are not worrying about new business for some weeks to come. Tissue paper mills also are keeping fairly busy; demand for fine tissue is quieter, but there is much activity in the market for toilet and other grades of tissue. Fine papers are moderately active. Demand is running chiefly toward the low and medium priced qualities but manufacturers are securing sufficient orders to warrant close to full production of their plants, and prices are wel maintained.

Box boards are rather easy. Consumers are purchasing in hand-to-mouth fashion at present, and this is the dull season for paper boxes now that the pre-Christmas rush is over. Plain chip board is quoted at from $50 upward a ton f. o. b. New York, and filled news board at around $55 per ton.

GROUND WOOD. — It is plainly apparent that sellers of ground wood are encountering less demand for that commodity than recently has been enjoyed, yet prices are fairly well maintained and the undertone of the market is comparatively firm. In fact, no actual change of consequence has been noted in ground wood quotations generally. Sales now and then at slight reductions in price have been reported, but these have been more of the exception than the rule, and most domestic producers continue to ask about $40 a ton at grinding plants for spruce ground wood for prompt shipment. A strong factor is that most newsprint concerns who make ground wood are using up pulp so fast that they haven't much supply to offer in the open market, also that they are conserving their surplus output for their own use. Offerings from various quarters are aggregately far below normal volume, which serves to sustain values in the face of a quieter demand. Imported ground wood is quoted at from $40 a ton upwards on the dock at New York with importers mostly disinclined to cut prices to effect sales.

CHEMICAL PULP — There is no question but that prices of chemical wood pulp are a little easy. Demand has subsided to a marked extent of late, and producers and importers are in frequent cases shading prices in an apparent effort to move at least certain lots of pulp. The present condition of the market is nothing out of the ordinary. Paper manufacturers invariably let up in their buying of pulp during the final several weeks of the year, while busy with inventories and therefore desirous of keeping stocks of raw material down. Furthermore it is no secret that pulp is coming into the States in exceptionally large quantities from Scandinavia. Swedish producers evidently are rushing out every pound of sulphite and kraft for which they can obtain shipping space prior to the

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